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This publication contains articles based upon selected seminar presentations and participant discussion. It is intended to focus Army leaders on the future and provide fuel for thought for discussion on the wide variety of future conflict issues that will determine, in great measure, how we will fight and win on future battlefields and succeed in operations other than war

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LOOKING TO THE FUTURE

TRADOC's
20th Anniversary
Seminar on
Future Warfare

Headquarters, TRADOC
30 June – 1 July 1993

LOOKING TO THE FUTURE

TRADOC's 20th Anniversary Seminar on Future Warfare

Headquarters
United States Army Training and Doctrine Command
Fort Monroe, Virginia

30 June — 1 July 1993

Foreword

Moving our Army into the next century is a journey, not a destination; we know where we are going and we are moving out.

Gordon R. Sullivan
Chief of Staff, US Army

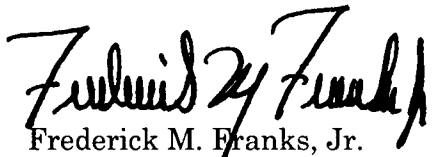
The United States Army Training and Doctrine Command (TRADOC) was activated on 1 July 1973. Under the leadership of its first commander, General William E. DePuy, TRADOC began operations with a burst of creative intellectual energy that led to what historians have referred to as a "military renaissance" in US Army training, doctrine, and concept development. Today, 20 years later, TRADOC continues to fulfill its vital mission of preparing the Army for war and acting as the Army's architect of the future. During this period of great change, as the command celebrates its second decade of service to both Army and nation, it was especially befitting that TRADOC marked its 20th Anniversary by hosting a seminar on the nature of future conflict.

The 20th Anniversary Seminar, held at Fort Monroe 30 June-1 July 1993, afforded an opportunity for senior active and retired military leaders, allied officers, academics, industry leaders, media members, theorists, and even science fiction novelists to examine and discuss the military impacts of change during this period of great threat ambiguity, strategic uncertainty, and global instability. Presentations and follow-on discussions focused on present and future challenges confronting the armed forces—particularly the Army—in performing increasingly diverse missions during war and in operations other than war.

Leading change in the Army, TRADOC has undertaken numerous initiatives and programs in recent years in the areas of doctrine, training, organization, materiel, and leader and concept developments. The 20th Anniversary Seminar added to the momentum of progress as the command forges its way toward the 21st Century.

This publication contains articles based upon selected seminar presentations and participant discussion. It is intended

to focus Army leaders on the future and provide fuel for thought for discussion on the wide variety of future conflict issues that will determine, in great measure, how we will fight and win on future battlefields and succeed in operations other than war.



Frederick M. Franks, Jr.
General, USA
Commander
Training and Doctrine Command

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BG Maggart, Deputy Chief of Staff, Doctrine, HQ TRADOC

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GEN(R) Richardson, Former Commander, HQ TRADOC

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LTG(R) Trainor, Director, National Security Program, John F. Kennedy School of Government, Harvard University

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COL Jun, Korea

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LTC McInnis, Canada

LTC Pike, Australia

Maj Altas, Turkey

TOTAL ATTENDEES: 103

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Introduction

The United States Army Training and Doctrine Command's 20th Anniversary Seminar series provided an opportunity for senior leaders, academics, defense analysts, and military and industry executives to engage in intellectual dialogue on the nature of future conflict. Three seminars were held: *Future Conflict—A New Era; The Nature of Future Conflict;* and *TRADOC—Looking to the Future.*

• Seminar One, ***Future Conflict—A New Era***, established the foundation for the exchange of ideas in follow-on seminars. It consisted of a single panel of two members: General (Retired) John R. Galvin and BG Harold W. Nelson, Chief of Military History. GEN Galvin, the guest speaker, offered his vision of future conflict. BG Nelson provided an historical perspective on the nature of change and the military. Following these presentations, the seminar moderator, MG William A. Stofft, Commandant of the Army War College, opened the floor for questions and discussion.

• Seminar Two, ***The Nature of Future Conflict,*** consisted of three panels. The first addressed future threats and future national security strategies. The second offered a joint perspective on future conflict with panelists drawn from different Services providing their vision of future war. It closed with a third panel addressing technology, peacekeeping, and information war—all three critical aspects of future military operations. As with Seminar One, a discussion period followed panelists' presentations.

• Seminar Three, ***TRADOC—Looking to the Future,*** began with presentations by TRADOC's Deputy Chiefs of Staff for Doctrine, Training, and Combat Developments. A senior leader panel, consisting of former TRADOC commanders and other senior leaders, drove follow-on discussions. Updates on current TRADOC programs preceded presentations on how the Army and TRADOC, as its architect of the future, can master change in these three vital areas.

Seminar presentations were structured to promote serious discussion on areas of great importance to the nation, the Army, and the Training and Doctrine Command. A frank and open exchange of ideas and opinions took place on the nature of future conflict. Contributions proved invaluable to the Army's efforts to meet the challenges of change that surround it, to win

on future battlefields, and to succeed in operations other than war. Two additional articles—*A Strategic Army for the 21st Century* and *New Combinations—The Future of Joint Operations*—evolved from the seminar and are included here.

A Strategic Army for the 21st Century

General Frederick M. Franks, Jr.
Commander, TRADOC

The ending of the Cold War has not ended the need for a strong Army to secure our national interests around the world. In fact, the opposite is true. As a strategic Service, our Army must be capable of providing forces that can fight worldwide in a variety of situations, from high-intensity conventional war to military operations other than war. Our capability to do this, coupled with the will to use military forces who have been given a clear purpose for employment, also serves as a deterrent to potential adversaries. Because America's Army exists to fight and win our nation's wars, it remains, as it has been in the past, the foundation of America's military power.

> *You will be called upon many ways in this new era to keep the peace, to relieve suffering, to help teach officers from new democracies in the ways of a democratic army and still...to win our wars.*
>
> *President Clinton*
> *West Point, May 29, 1993*

This paper discusses the value to the nation and to senior joint force commanders of an Army that is postured and maintained as a strategic force. It briefly addresses the nature of the world environment, concluding that regional conflict is a high probability in the future. It then defines "strategic relevance" with regard to Service capabilities and shows how the Army fits the definition across a full range of wartime and peacetime missions. The paper concludes by addressing the need for a strategic Army in the future and describing those capabilities and advantages it should bring to the joint team.

AN UNSETTLED WORLD

The demise of the Soviet Union and the end of the Cold War have led many to conclude that a threat no longer exists. In reality, these unprecedented events have resulted in a multifaceted environment that is in many ways more dangerous than that posed by the Soviet Union. Recent events have shown that the world is now more unstable than ever before. It is a world which needs a strategically capable US Army.

In February 1993, Secretary Aspin framed the focus of the Army's attention and the shape of its contribution to the overall national strategy when he articulated four dangers to world order: the possibility of a weak US economy; the failure of the democratization in Eastern Europe and the republics of the former Soviet Union; the continued proliferation of weapons of mass destruction; and the threat to the vital interests of the United States and its allies from regional conflicts.

Possible situations that could threaten US and allied vital interests over the next decade include North Korean aggression on the Korean peninsula, age-old ethnic strife in the Balkans, struggles for security and regional leadership in the Persian Gulf states, and illicit drug trade originating in the Andean Ridge region of South America. Any of these potential conflicts could affect the prestige, prosperity, and peace of the core states; any, or several, of them could escalate into larger wars involving the United States. Thus, while it is reasonable to expect that the world is currently safe from global nuclear war, the probability of regional conflicts is high.

THE ARMY—A STRATEGIC MEANS TOWARD NATIONAL GOALS

The Army has always been a strategically relevant Service. Experience in World War II, Korea, and the Persian Gulf demonstrates this, as does our extensive participation in military operations other than war since World War II. Nonetheless, the utility of conventional ground forces continues to be contested. Time and again, however, theoretical arguments give way to the unmistakable strategic practicality that the Army is essential to achieving decisive results in military operations.

With few exceptions, Army forces have been central to every major military operation during the Cold War era. Army light and special operating forces formed the core of the joint force which deployed to Panama on 20 December 1989 during Operation Just Cause. The Persian Gulf conflict, which began in August 1990, eventually required the full range of Army armored, light, and special operating forces as seven divisions, two cavalry regiments, and a host of combat support and service support units deployed to Saudi Arabia. More than 6000 soldiers from units that had just participated in Operation Desert Storm eventually redeployed to Turkey and northern Iraq in support of Operation Provide Comfort in April 1991. This four-month operation demonstrated the agility, versatility, and deployability of Army forces in shifting from war to operations other than war. More than 17,000 active component

soldiers and nearly 7000 from the USAR and National Guard supported federal, state, and local authorities during disaster relief operations following Hurricane Andrew in Florida in August 1992.

Recent trends continue to demonstrate the value of an Army that can support national goals. Today, for example, more than 15,000 soldiers deployed in 61 countries are performing almost 1500 different missions, ranging from peacekeeping in Macedonia to disaster relief along the Mississippi River. Forty-seven significant deployments of soldiers and units have occurred since 1990—most for military operations other than war. During these deployments, the Army has provided unique capabilities:

- Light and special operating forces versatile enough to operate across the full range of military requirements.
- The command and control capability and infrastructure necessary for sustained combat operations by joint forces on land.
- A variety of logistics units that have deployed for every major contingency in the past four years.

What Makes a Service Strategically Relevant?

Each Service derives its strategic relevance not from specific weapons systems, but from the results they can achieve for our national leaders. The Air Force is relevant not because it has fighters, bombers, and precision-guided munitions, but because it offers an immediately responsive strike option—a response that puts at risk only a small number of people. The Navy and Marines provide not just aircraft carriers, guided-missile cruisers, and short-term land presence, but a sustainable offshore presence that can send a powerful signal to an adversary without committing the nation.

Army soldiers and units, with their rifles, tanks, and attack helicopters, are strategically relevant far beyond the combat power they represent. They offer to the President the means for conducting sustained operations on land and for establishing long-term control of territory and populations essential to wartime success. They also provide the low-level influence and versatility that are key to most military operations other than war.

Placing American soldiers on foreign soil is the strongest possible signal of US resolve. When the Army is committed, so is the nation. Simply stated, the US Army is America's strategic trump card. When diplomacy, shows of force, and precision air and missile strikes fail to convince an adversary to conform to

the rules of international law, ground forces must be introduced to force him to comply.

Joint Operations

The American way of warfare today is joint warfare—an approach that is essential to success in large-scale combat operations. Together, the Services' combined conventional capabilities provide a strategic deterrent once attributed only to nuclear weapons—one that is unmatched anywhere in the world. Weaken any of the components, however, and this dominance diminishes.

On rare occasions, one Service's capability might be used almost exclusively to accomplish a combat-related task. The June 1993 punitive strike by the US against Iraq with ship-launched tactical land-attack missiles is an example. The 1986 strike by Air Force fighter-bombers against Libya is another. However, the use of one Service occurs under the command and control of a joint force commander who has a variety of other Services' capabilities available should he need them.

Joint force commanders must be able to employ air, land, sea, space, and special operations forces in wartime and in a wide variety of military operations other than war. It is often difficult to view the relative contributions of the Services in isolation. Each is critical to the success of the joint force and each has certain unique capabilities that cannot be duplicated by other types of forces. Given the appropriate circumstances, any dimension of combat power can be dominant in certain operations or a phase of a campaign, and each force can support or be supported by other forces. Contributions will vary over time with the nature of the threat and other strategic, operational, and tactical circumstances. However, because the employment of Army forces signals America's determination for decisive victory, land warfare remains the foundation of America's military capability and the centerpiece of joint warfare.

The Army in Joint Wartime Operations

The Army is responsible for organizing, training, and equipping land forces and providing them to joint combatant commanders, enabling them to conduct *prompt and sustained combat operations on land* in pursuit of strategic objectives. The joint force commander must have these forces in order to defeat enemy land forces and seize, occupy, and defend land areas. The Army is thus the joint force commander's land-power custodian.

The Army maintains, as it has in the past, the nation's most versatile force projection capability, making its value to the

nation indisputable. It adds significant capabilities to the joint force:

- Vast experience in large- and small-scale operations honed in actual combat and in the tactically competitive environments of combat training centers.
- Units that can be rapidly tailored to specific situations.
- High-quality soldiers and leaders who possess a variety of skills required for combat and other operations.
- Forces positioned forward near potential trouble spots.

The control of territory and populations in joint warfare will continue to be central to strategic success. A major regional contingency (the 1991 Persian Gulf Conflict is a good example), characterized by large-scale combat operations, will require all of the capabilities our nation can bring to bear against the adversary. These operations will always require Army forces because they are uniquely capable of seizing, holding, and controlling territory and working with, assisting, and defending large populations. Only Army forces are uniquely capable of the sustained ground combat operations across vast expanses of land that are necessary to prevent the advance of extensive enemy ground forces, to unseat them, to drive them back, and to defeat them in detail.

If large-scale combat operations are required, commitment of the Army contributes an infrastructure beneficial to joint and combined operations, including some capabilities that other Services do not have. Engineer units, for example, provide significant horizontal and vertical construction expertise. With various transportation units come port-clearance operations, bulk petroleum distribution, and an extensive line-haul capability needed for throughput of theater logistics. The Army provides comprehensive health service support, which includes extensive surgical expertise. These and other unique capabilities benefit the entire joint force and our allies. They are indispensable for preserving the joint force, sustaining theater operations, supporting land forces, and conducting the postconflict activities that will follow wartime operations.

The Army in Military Operations Other Than War

The US is more likely to become engaged in military operations other than war. A wide range of possible operations requires the Army's unique capabilities to ensure strategic success.

The Army's sustaining base and a wide range of individual and unit skills combine to make it the most versatile and

capable Service for responding to the diverse requirements of most military operations other than war. Military police, for example, can provide a mobile, lethal show of force, restore civil order, process prisoners of war, and assist peacekeeping operations. Engineer units can transfer their skills from combat missions to other tasks such as rebuilding local infrastructures or restoring water and power supplies. Field artillery and infantry units can fight forest fires on short notice with minimal training. This versatility extends to larger units as well. The 10th Mountain Division, for example, was reconfigured for JTF Andrew disaster relief operations in Florida in September 1992, and then reorganized in December to provide humanitarian assistance during Operation Restore Hope in Somalia. These examples represent a significant capability that our national leaders can employ on a moment's notice.

More than any other Service, the Army works daily with the people of countries around the world, soldier-to-soldier and soldier-to-civilian. The pervasive influence of these relationships is difficult to measure; the impact of their success goes well beyond the immediate task, with the actions of individuals and small units often taking on strategic significance. Consider the Army's military-to-military contacts with the armies of other countries. A foreign army is often the dominant Service in its nation. Sometimes it is the dominant institution, providing the only effective government services. These armies rely on the US for doctrine, training, technology, command and control expertise, intelligence, and a host of similar functions that they themselves cannot provide.

For most of the world, the US Army is the leader in developing and executing land force doctrine, training, and simulation technology. Our military-to-military contacts help stabilize newly emerging nations, reinforce stability elsewhere, and provide strategic access and influence. In Latin and South America, for example, long-standing Army contacts in 22 countries over the last two decades have helped foster the transition of pro-Communist countries and other dictatorships to a democratic form of government. Every Latin and South American country now exists under some form of democracy due in large measure to the efforts of the US Army operating in the region. In these and other ways, Army involvement contributes to international peace and stability.

THE WAY AHEAD

The challenge has always been to balance the demands of national defense with domestic priorities; within that competition, the struggle has been to achieve the right balance

and blend of Service capabilities. If the Army is to continue as a viable strategic force, it must retain and improve those capabilities and advantages that are invaluable to the joint team:

- The Army must remain versatile and reliable—capable of employment quickly anywhere in the world across the full range of possible military operations—as an instrument of national power.
- Army forces must retain the capability to deliver decisive victory through the overwhelming power of modern technologies. This requires continuing modernization, fielding systems that can outmatch any adversary—an effort that ultimately saves soldiers' lives.
- The Army's doctrine must remain relevant to our changing world.
- The Army must maintain trained, high-quality forces ready to serve the nation in any capacity.

The Army's strategic deterrent value will continue to be realized primarily by a combination of forward presence forces in critical areas and rapidly deployable forces based in the US. Nonetheless, the shrinking defense budget and lack of a traditional, monolithic threat will cause some analysts to question the relative value of Army divisions when compared to carrier battle groups or fighter wings. Similar comparisons extend to the need for a wide variety of expensive, advanced technology systems important to the Services' modernization programs. Those who do not understand the strategic relevance of the Army might suggest inhibiting modernization and reducing the Army's active component force structure to a level that could jeopardize national security.

How large the post-Cold War Army—or any other Service—should be depends directly on the risk that the nation is willing to accept. The Army force that is available for prompt and sustained operations is, in reality, the sum of the standing active Army minus the forces in the sustaining base and those that are strategically fixed, such as forward presence forces (in Germany for example) and those on contingency missions (such as in Macedonia). Risk can be simply defined by the following equation: the options available to the nation decrease as resource constraints reduce the active component, thus affecting readiness, and as commitments around the world increase the strategically fixed force. This decrease in options is exponential, not incremental.

It is clearly necessary to have enough active component combat forces available to win a major confrontation (such as

the 1991 Persian Gulf Conflict) while maintaining a reserve for other contingencies. "Winning," in the eyes of the American people, is quick and decisive, with few casualties. Their expectation represents an informal but well-publicized social contract between the American people and their military. To have neither sufficient capability for requirements beyond a major regional contingency nor the ability to end conflict quickly on our terms with acceptable losses is to invite attacks against our interests by adversaries seeking strategic surprise and regional opportunity.

Further reductions will jeopardize public expectations and limit employment options, thus increasing national risk. Indeed, at some force levels, potential adversaries might not view our military capability seriously. *The first time we fail to protect our interests in a conflict involving commitment of large forces, we cease to be a military superpower.* This would affect balance-of-power relationships around the world. Moreover, if our forces suffer significant casualties even though successfully protecting US interests, public confidence could erode to the point that the American people would not support future American intervention, even when vital national interests are at stake.

Three beacons should remain clearly visible to help meet current and future challenges and guide our nation toward the 21st Century:

- First, we must understand that the world is still a dangerous place.
- Second, as a result of the uncertainties of the current strategic environment, the military pillar of national power will prove critical to the maintenance of America's position as world leader. With the end of nuclear confrontation, the relevance of conventional military strength has increased immeasurably. Consequently, the flexibility and diverse capabilities of the US Army during war and in military operations other than war are more relevant today than they have been since the end of World War II.
- Third, and perhaps most important, so long as man possesses the capability to wage war on land, a strategic army is absolutely essential for the options it provides our nation and its leaders—**land control and strategic staying power.**

TRADOC at Twenty

General (Retired) Donn A. Starry
TRADOC Commander, 1977-1981

Wouldn't it be great fun to spend these next few minutes just reminiscing about what TRADOC has accomplished in the last 20 years? To recite it all would take more time than we have. But however bright may have been the past, serious business is waiting ahead. So the question is, where should we be going?

PERSPECTIVES ON THE NEW WORLD ORDER

Answering that question requires a perspective about the risks and uncertainties that will likely abound in the world in which we can expect to live. What seems to be the most important of these?

First is the possibility of significant change, or even reversal of reforms ongoing, in the former Soviet Union, especially in the four former republics that have residual holdings of nuclear weapons and missile delivery systems. Assured stable control of those weapons systems is a matter of considerable urgency. At the moment that control seems to reside in the central directorate for the armed forces. Thus, control is in the hands of those who have suffered most from the political collapse of the Soviet state, and amongst whose ranks are increasing numbers who long for at least some vestige of the status they once enjoyed. Voices in our country urge democratization as a panacea for the political turmoil in the collapsed Soviet state. Memory is short: we speak democracy, they speak democracy, but the same word has quite different meanings. They must surely find some form of representative government if the world is to be rid of tyrannical governments and rogue dictators. But find it on their own terms they must.

Second is the instability created by religious and ethnic strife in many parts of the world, former Soviet republics and the Balkan states being the most obvious instant examples. For there, Communism simply put a lid on incipient strife for half a century or more. Now, destabilization must be held in check by other means yet to be identified.

Third, the long-term Third World trend toward militarization of conflict with large numbers of modern weapon systems, best characterized by the Arab-Israeli wars, has come to a new

juncture with the advent of weapons of mass destruction and growing inventories of missile systems—ballistic, semiballistic, and cruise—with which to deliver them. Indeed, the political demise of the Soviet Union created at least four new Third World countries, each with some numbers of thermonuclear weapons and missile delivery systems. These four add to a growing stable of nations that, as modern weapons and technologies have become available, determined heads of state have been willing to expend important national treasure to acquire.

Fourth is the growing interdependence of the international economic system, whose complexities have yet to be widely understood. Particularly not widely perceived is the unhappy geographical juxtaposition of, on the one hand, critical strategic resources and, on the other, Third World countries with major weapons holdings and unstable or hostile heads of state. Today, this phenomenon is particularly striking in the Middle East and North Korea, arguably less so in south Asia. In the longer view, it can appear in South Africa and parts of South America. Thus economic security will likely be the prime political consideration exciting economic, political, military action.

Next, the nation's military can expect less and less understanding and support in both executive and legislative branches of our government as generations of those who have not served in uniform come of age and invade those bureaucracies. This fact is strikingly evident in the present administration; but this one is probably only a harbinger of those to come.

Finally, domestic social and economic turbulence in our own country, combined with the notion that the Cold War—and so all war—has somehow gone away, has created a situation in which the national military strategy will be determined by what's left after other claimants have their way, rather than by what's needed to provide a respectable military capability consistent with the nation's place in the new world disorder.

OPERATIONAL CONCEPTS

The national military strategy sees deterrence of war as our first-order goal. Noting that most US military forces will be based in the United States, it further acknowledges that contingency operations will be the norm rather than an exception; that quick decisive success with minimum friendly casualties will be imperative. This strategy reflects dramatic changes demanded both by the nature of modern battle and by the demise of the Soviet threat. Traditionally, United States strategy has assumed we could afford to lose first battles of a war, for soon mobilization of manpower and industry would

enable us to overwhelm the enemy with numbers and win the war. Army performance in first battles has reflected that strategy. In 13 battles in 12 wars, the Army suffered defeat, or at least very costly margins of victory in all but 4. Three of those 4 battles have occurred in the last 10 years: Grenada, Panama, Desert Storm. The operational concept under which those 3 battles, especially Desert Storm, were fought was designed to fight and win first and succeeding battles, and to do so well below the then perceived nuclear threshold. While that need was not new, it was made more urgent by the nature of the modern battlefield: dense with sophisticated systems, intense, with high losses early-on; enormous command-control difficulties reflecting the density-intensity equation; battle going not so much to the outnumbering side, as to the side that early-on seizes and holds the initiative. Some say such a system is no longer necessary; the Cold War is over. Well, to paraphrase Chairman Colin Powell, demons may be harder to find these days, but they are nonetheless there. And uncertainties about their intentions make this planet yet a very dangerous place. Therefore a realistic military strategy must include operational concepts for contingency operations under the threat of missile-delivered weapons of mass destruction. Forces must be structured to be delivered quickly, get their job done quickly, and exit promptly. Significant changes will be required to tactics, weapons systems, force structures and organizations, support concepts, information collection, analysis, dissemination, and management.

Weapons of mass destruction can be delivered by missile systems from airfields, fixed or mobile launchers, manned or unmanned aircraft, or submarines. Delivery systems have ranges from a few kilometers to more than 1,000 kilometers, with global positioning system accuracies. Nuclear, chemical, biological, weapons effects—all greater than those of conventional systems, make weapons of mass destruction more political than military in their ultimate effect. These systems will be harder to find and destroy in counterforce operations before the fact because, heeding the lessons of Desert Storm, the Third World is going underground, moving these critical systems into hardened facilities. Active defense against missile systems, that is, defense after launch, is a complex technical challenge. It is one to which we have paid too little attention, neither exploring the right technologies with sufficient vigor, nor buying sufficient quantities of the technologies we do have in hand.

Increasingly then, contingency forces will be required to deploy and be employed under a new kind of threat; one which requires additional smaller combatant forces—brigades,

armored cavalry regiments, divisions no larger than 10,000; smaller and more effective replenishment support—ammunition, fuel, spares, food and water; smaller and more effective services support—medical, maintenance, transport. We can have no more duplicative layered logistics of the kind so characteristic of army logistics. Some battlefield operating systems—missile and air defense, for example—must be deployed early to protect landing areas and forces. Shipborne antiair and antimissile systems will be required early in operations across littoral areas. Every contingency force, no matter how small, will be a joint force. It may contain one or more battlefield operating systems; it may be a full-up combined arms force. Its first-order task will be to control extended battle space; to accomplish more with less. Whatever its size, the means to deploy—air and sealift—must be immediately available and responsive. This means adequate fast deployment sealift and airlift. Integral to effective use of sea and airlift is an effective interactive data system to plan and execute deployment and redeployment. Despite our presence on the edge of the information age, a modern system to do this does not now exist.

EQUIPMENT: RESEARCH, DEVELOPMENT, AND ACQUISITION

The purpose of the research, development, and acquisition system is to provide our military forces with equipment, modernized at a rate consistent with that of the expected threat. We are notoriously ineffective at this. Historically, two reasons dominate. We do not have a system to effectively project threat developments so that what we have under development overmatches whatever threat can be expected at the time of fielding. Therefore, we have been, and will likely continue to be, forever in a catch-up mode, unable to establish and sustain a competitive modernization rate. Secondly, we traditionally succumb to pressures to keep things on the laboratory bench just a little longer. A few more dollars and a little more time will solve everything, or so goes the argument. Historically, a few more millions, perhaps billions, and a few more months, more likely years, have consistently failed to achieve a distinguishable effectiveness margin. We have been unable to establish and sustain a reasonable laboratory-to-field rate, further dooming us to forever catching up. Not true of all systems, but especially true of ground combat systems. Technology is often heralded as having won the Gulf War. While not at all true, that perception is the prevailing self-sustaining myth. We do, however, face some perplexing problems, created by and solvable by technology.

Most demanding is resolution of the glut created by information technology—in intelligence as well as operational information systems. For contingency operations, the entire information process—intelligence, targeting, and direction of operations—requires a new style of tasking, analysis, and dissemination. The improved system must provide global situation awareness through the flexibility to focus sensors and analytic resources quickly and precisely. The process must be multidisciplinary, regionally oriented, and include intelligence and response planning teams completely responsive to operational needs. Technology must be directed to measurement and signals intelligence on countering chemical and biological weapons, to include tactical warning of attack; on automatic target recognition—moving and stationary; and on sensor-to-shooter linkages for warfighting. Theater-level command-control systems and the process they support must be totally responsive to the needs of the operational commanders. Getting the right information to the right party at the right time is basically a signals-to-noise problem that thus far has escaped comprehensive definition, and so defied resolution. Weapons for the contingency battlefield, both for counterforce operations and active defense, include long-range, standoff delivery, precision-guided, all-weather, short-time-of-flight weapons and related sensor systems for air, sea, and ground-based delivery. Especially needed is a satisfactory system for attack of hardened underground targets.

Defending against missiles during or after launch—active defense—requires improved target acquisition and guidance technology coupled to hit-to-kill warheads. Theater missile defense systems are required for both land forces and sea-based platforms. Passive defense against weapons of mass destruction demands better warning-of-attack systems, a comprehensive antibiological vaccination capability, and an expanded decontamination capability. Conventional combined arms forces—reconnaissance, tank, artillery, infantry, engineer—must acquire technologies that will expand battle space—making it possible to do more with the same or less equipment. This matches the operational need for more smaller combatant units.

ORGANIZATION

The unhappy disconnect between end strength—the numbers of soldiers available—and structure—the numbers of divisions, regiments, brigades, and battalions—has plagued us, at least since the end of the Vietnam War. It was the genesis of General Shy Meyer's "hollow Army." Remember, the Congress controls the end strength; it is a budget issue. The Services

more or less determine what structure is to be built with the strength available. Both Congress and the Defense staff have recently been willing to help the Services with the structure task. Recall, the incumbent Secretary of Defense has been a long-time contributor to this dialogue; chances are he will continue in this role, but from a different platform. Read carefully, therefore, what he has said, and continues to say. For given his numbers, we will be lucky to have enough strength to field more than a handful of divisions, certainly not the 12 often heralded as baseline. As has been its custom, the Army will strive mightily to keep division flags flying, using the illusory logic that roundout battalions and brigades will fill those divisions quickly in time of emergency. If we do that, we will have recreated the "hollow Army." A glut of support infrastructures with totally inadequate combatant forces will result. Guard and reserve units will need longer, not shorter, train-up times. Remember the three famous National Guard brigades mobilized as roundout forces for Desert Storm. Two problems persist.

First is the role of the reserve components—National Guard and US Army Reserve—in our military strategy. Honest appraisal of the history of individual and unit readiness of Guard and Reserve units will lead to dramatic changes in perceptions of what we can expect of them. Individual and small-unit readiness and command and control are two basic problems as General Rick Brown so eloquently points out in his fine book *Landpower in the Information Age.* Information technology can help solve some of the individual and small-unit proficiency problems. But quite clearly, if they are to be competitive with active Army units, some kind of National Training Center opportunity must be provided for Guard and Reserve units. As they are presently structured and supported, our Guard and Reserve forces are an anachronism—a second-wave system in a third-wave world. We have not even been willing to provide them with modern weapons and command-control systems like those in the active forces. Further, the complexities of air-land operations—contingency operations—are at least an order of magnitude greater than anything Guard and Reserve units have been required to cope with before.

Second, perhaps first, is the question of how to structure the active Army, whose strength will have been determined by considerations quite apart from what might be called for by the national military strategy. Contingency operations demand more smaller combatant forces; more firepower for less manpower. A contingency-based army would feature, for example, more armored cavalry regiments. Where else in any

army in the world can one find as much combat power in the hands of so few soldiers? Indeed, that particular unit represents a unique US Army capability; no army in the world has anything like it. Were we thinking rationally about the US commitment to whatever force remains in NATO, we would likely be looking at a half dozen armored cavalry regiments, not a token number of bobtailed divisions.

At battalion or squadron and below would be smaller platoons, companies, and battalions, made equally as effective as larger such units by developing the technical means to expand battle space. More smaller combatant units mean less demand on deployment means, less replenishment and services load for the deploying force, less of an operational command control problem once deployed. Changes to active force structures would be cloned in Guard and Reserve units; more smaller combatant units in the Guard and fewer replenishment and services units in the Reserve. With this, reserve components would finally become third-wave forces, at considerably less strength, or considerably more effectiveness at the same strength.

TRAINING

Training, and so readiness, of an army hangs on the troika of individual, unit, and leader training. As technology has added to the complexity of soldier tasks, the need for more time for training in more individual skills has become acute. Unwilling to pay the price for this increased time in the training base, the Army has dumped the increased load on units. In units, the greatest inhibitor to effective unit training and so to unit readiness is personnel turbulence. We know pretty conclusively that once the turbulence rate rises above about 20 percent per quarter, no meaningful training gets done. Yet many units show turbulence rates well over that threshold. True, modern information technology can be enlisted to help mitigate some of this problem; the National Training Center experience has helped. But it remains that personnel turbulence is the barrier that stands between ordinary units and excellent units. In an army as small as ours is likely to be, average or less-than-average units are a luxury we cannot afford. At the heart of the turbulence problem is the individual replacement system. Like the reserve component system, it is a second-wave system in a third-wave world. A unit replacement system—probably at battalion level—is likely the best answer, units whose personnel have trained together to become effective combat teams for the demanding world of contingency operations. Soldiers are the constant. They will do whatever they

have been trained to do. However well they perform is a function of how effective the training has been, especially unit training. Desert Shield/Desert Storm demonstrated that conclusively. Leadership lays out and accomplishes training. How good is the leadership?

Of all the fractures the Army suffered during the Vietnam War, none perhaps was so dramatic as the virtual destruction of the NCO Corps. At least 10 years went by before the NCO education program and related undertakings produced appreciable changes in the NCO Corps. But are we there yet?

In March, the honorary command sergeant major and the honorary colonel visited the black horse. Invited to look at training, we observed marksmanship training on the *Weaponeer* system. Soldiers were blazing away over the sandbags, while sergeants, watching the monitor, were critiquing their performance: "You're firing low and to the left," and so on. To the old soldiers, the sergeant major and me, it was quite clear why the target was not being hit: mostly poor firing position, improper breathing, and trigger squeeze. But sergeants were watching the scopes, not the soldiers. Technology had intruded between NCO and soldier. Would the sergeant have known what to say had he been watching the soldier? We asked one sergeant to do just that while we manned the screen. The sergeant was unable to critique the soldier directly, he couldn't detect why the firing was bad, he only knew it was, and that he learned from the screen. We have all helped create that situation, now we have to fix it. How many young officers today know sergeants' business well enough to do what was to two old soldiers simply second nature? Training, education, selection for promotion and command, and a host of other initiatives appear to have revived the officer corps from a Vietnam era nadir. However, one still sees some numbers of average or less-than-average unit commanders; blue still gets beat rather regularly at the National Training Center; careerism is yet a problem frequently commented on with concern. It is likely that such matters will ever be of concern, largely because new generations come along regularly, and it seems in the nature of such matters that each must learn the same lessons in its own fashion. Could we just accept that reality, then on what would we focus leader attention for the world of contingency operations? Embedded in AirLand Battle is the notion that no matter which side is favored by numbers, and no matter which side attacks or defends, battle most often turns in favor of the side that somehow seizes the initiative and holds it to the end. The operative word is *initiative*. Whatever *initiative* may turn out to be reflects the scope—depth, breadth, content, and context—of

leader education, training, experience—upbringing. For to get anything done, someone has to begin, to go first. Going first is not without considerable risk; taking the initiative is not a thankful task. But while every important undertaking must have some beginning, it is seeing it through to the end—to a successful conclusion—despite odds and obstacles that, as Sir Francis Drake noted years ago, "yields the true glory." That's the true measure of leadership.

The next few days we will recount TRADOC's "true glory," and speculate on how to do it again. For TRADOC's initiatives—the courage to embark on uncharted waters, the courage to risk the perils implicit in going first, and the sheer guts to see the undertaking through to the end—are all TRADOC's legacy; what we have all individually and collectively given those who follow in search of the "true glory."

The Face of Conflict in the Year 2010

General (Retired) John R. Galvin

I'd like to talk about the year 2010. I want to give you my view of what the world would be like, what a strategy might be to meet that world, and what effect this will have on military institutions. I will construct for you a mosaic on the wall of time. Together we can look at that wall and try to see a face in that mosaic, the face of battle of the future, and the consequences of that face of battle.

In 2010, I believe that the United Nations will have been enlarged by the arrival of new members and strengthened by several successful operations, including humanitarian assistance and crisis prevention, but also affected by new stresses and tensions. Many nations have been ambivalent in their approaches to internationalism and multilateralism. National independence still remains the supreme guiding principle, and national interests are not always compatible enough to encourage collective action. Although the nations talk about multilateral action under a world architecture, we still see the tendency to return to strategic approaches that are based on the concept of balance of power; in other words, the forming and reforming of coalitions as powers grow and diminish. The major nations will be ready to act at times, and at other times they will not.

Around the world, regional organizations will have experienced some emphasis, some growth, and some structural improvement, and these organizations will be serving as fora for discussion of problems of security and stability. The ability of these structures to do more than to meet and talk, that is, to act in a collective way, will vary with the regions depending on the amount of commitment that nations are willing to provide. In the European region, for example, the structures will be more well developed and more experienced, since they will have been in existence for many years. On the other hand, the lack of an earlier structure will delay the formation for a collective approach in the region of the Pacific rim. I hope, however, that we will have seen at least a start, a beginning, of something along the lines of the Conference on Security and Cooperation in Europe.

It will be a battered world in 2010, although no major conflict will have occurred among the great powers. But

between now and then we may see a dozen minor conflicts and perhaps 10 or 20 major terrorist acts.

The world is going to be very dynamic in 2010. We will be a kaleidoscope of power and interests as Germany, China, Japan, the European community, the United States, and Russia grow in power and assertiveness. I hope the United States will have friends around the world, but I'm sure that the friends will have trouble. China will have blasted off into its enormous economic explosion and, of course, will be confronted not only by Japan, but by a Russia that will have managed to pull things together over the next couple of decades. Powerful competitions and confrontations will occur around the south China Sea and the Asian Pacific.

In 2010 the world will be more Muslim than it is today, with Islam facing a problem of demographic discipline, which it may or may not be able to control. Within a united Europe will be a very powerful Federal Republic of Germany. Africa will be in absolute shambles, far worse than before the time of exploitation and colonization.

The threat of mass destruction will be a constant danger in 2010. Many small nations will be more dangerous then they are today.

I have assembled—rather quickly, rather hastily—the mosaic on the wall. Now let us try to step back from that wall until the mosaic comes together so that we can see and read and understand the image that emerges—the face of combat.

What do the early decades of the 21st Century look like when we talk about military response? How do we organize for new forms of challenge? The world will bubble with crises large and small. We will be dealing with crises, trying to prevent them, and when we cannot prevent them, we will be trying to respond to them. Crises will be caused by demographics, by fanaticism, caused by ideology, race, religion. We will find ourselves engaged in crisis action, massive humanitarian problems, the narcotics problems, the spread of ballistic missiles.

Terrorism will be more likely than ever, and we will be very lucky if it is not connected with weapons of mass destruction. A potential link exists between terrorism and mass destruction that is becoming more and more evident in a world where nuclear weapons and other weapons of mass destruction exist. This will be our most dangerous possibility. We are going to have a need in 2010 to search out and find weapons of mass destruction that have fallen into the wrong hands.

In the so-called "nonmilitary" crises, we will have the natural disasters: famine and the spread of contagious disease

may return with the power that these threats possessed in the Middle Ages. Something will occur that we did not think would happen again. Who would have believed we would be ending this century with diseases out of control for which we have no cures? This is not what we thought the 20th Century would give us; in fact, the opposite.

All of this will cause us to derive a wider and more variegated set of military missions. In general, the missions will be deterrence, peacekeeping, peace enforcing, counterterrorism, counternarcotics, humanitarian assistance—all of these involving joint-combined efforts, coalition efforts around the world.

If a message emerges at this point, it would be that we must not see ourselves in the military as standing alone. We need to understand that operating alone will be the exceptional case. We can't even have the luxury of thinking of ourselves simply as an army or a navy or an air force. We have to see ourselves as part of a bigger and broader politico-military structure; we must be ready and able to be integrated with other national forces in a variety of missions.

The overall structure under which we will operate will be the United Nations, and we should be doing everything possible to strengthen that organization. We do not, however, need a UN that has its own combat forces under the immediate control of the Secretary General. First, this would remove too much of the flexibility that individual sovereign states will want to maintain for themselves. Second, the UN will very likely have to face multiple crises in different parts of the world at the same time. At this moment, for example, the UN finds itself committed in 13 different places around the world. No thought should be given to trying to micromanage so many disparate politico-military operations.

More appropriately, the UN should set forth the mandate; to say, for example, "Saddam Hussain should be driven out of Kuwait." The rest—the execution of the mandate in which a coalition, primarily from the region but possibly assisted by forces and resources from other regions—would act in the name of the UN. Once a mandate is given, and under international law we are able to act, the UN task should be accomplished by the region.

This is why I say that as military leaders we should be prepared to operate in conjunction with the forces of other nations, with friends around the world. We must look carefully into this consideration, this question of military operations within a joint-combined force, because our view of this will

affect strategy, tactics, doctrine, organization, equipment, training, and even perhaps our concepts of leadership. It includes such questions when you need to operate with friends around the world.

One of the major reasons the UN coalition did so well in the Gulf War is the combat power that we were able to bring to bear. Another, and even more important, is synchronization—the bringing together of air, ground, and sea forces in a way that utilizes their power with maximum effect.

We have used a lot of words to explain why the UN coalition won so quickly and completely in the Gulf War. We say orchestration, we say simultaneity, we say we are coalition-capable. We are looking for a concept and we need to find it, to know more about it, to understand it. The question is, "In modern combat, how do your coordinate everything and make sure that your opponent does not coordinate everything?" That is what happened in the Gulf and that is the thing we have to study the most as we look at 2010. How are we going to do that? We can maintain readiness, we can maintain high mobility, but what we have to be able to do is orchestrate our combat power.

This means, first, we must fully understand the role played by military infrastructure: the command and control apparatus, the long-range communications, the satellite network for intelligence collection and dissemination, the ports, pipelines, airfields, the airspace management, the air defense systems, and all the rest of the systems that contribute to the synergistic combination of combat power on the battlefield and in the campaign.

Second, we need to comprehend the concept of deep battle, that is, the effort to strike the enemy not only within the area of "frontline" contact but throughout the depth of his position and against his forces in movement, against his reinforcements, against his logistics, and against all aspects of his infrastructure.

Third, we must be sure we conceive of battle as three-dimensional. It is a different kind of battle from what we study in the history of warfare. Napoleon at Waterloo fought only against Wellington's line of defense. He was not concerned with the depth of the battlefield and he was not, of course, worried about air strikes or missiles against his forward forces or his rear echelons. War in 2010 will be very different. We must understand that the map is not flat anymore, not two-dimensional. The battle map of today, and even more so tomorrow, is cubic. It takes into account the air dimension, including the air as it is used by ground forces and sea forces as well as by air forces.

I'd like to say something about combat developments as well as about operations and strategy. We need to have a clear view of our goals, our objectives, in the creation of modern high-technology equipment. We are trying to maintain the edge, to keep the most up-to-date military force possible, recognizing the constraints we will be under in future years. The military undergoes what you might call "technological rust." We rust away a little bit every day, and somehow we have to respond to the problem of obsolescence—technological obsolescence.

We can't simply go out and buy everything new. We fought the Gulf War with such modern weapons systems as the Stealth aircraft, but we also fought the Gulf War with the F-4 Phantom, which was flying when I was a lieutenant. We have to see what is the best mix at any time and we have to be convincing in explaining to our political leaders why we need that short list of improvements in order to make the overall force mix as effective as possible. It may be a very short list indeed, one that does not necessarily bring the total Armed Forces up to the level we would like to see, but does the best it can. Progress under constraints—that's one that I think deserves the most study because it is the strongest argument if the people to whom you are talking believe in a modern, high-technology military force. I'm talking about how you do your research, development, testing, and engineering; how you come up with what it is that's going to go into the mix.

We military have a tendency to concentrate too exclusively on the needs of our own Service. Each Service is like an industry that does all its work in one building. That's the way industry was doing it sometime in the past, but it's very interesting when you see the work of teams inside a modern high-technology industry. The team is networking with other teams within the company, but to an even greater degree, it is networking outside that particular corporation or industry. For instance, you will find that Motorola teams for developing new products are networking with Toshiba and Siemens more than they are networking inside Motorola. We can learn from that. Is the Army networking with the Navy and Air Force in development of doctrine or tactics or weapons, even more, perhaps, than it is working inside?

And how does industry get away with that? How do they risk such a thing? It's very interesting. They are not trying to block the flow of knowledge, of discovery, of innovation. They cooperate with each other while at the same time they compete, knowing that the flow of information is important to them both. In other words, the risk of isolation is greater than the risk of sharing knowledge; we need to study this. We need to realize

that we can't train as the Army because we are not going to operate as the Army, but rather as a joint-combined force.

As we become more and more a high-technology military institution, with more electronics, more computers, more complexity of weapons systems and equipment, our training needs will change. Even the style and substance of training may change. To think that we might be reaching the point, the time, when training simulators and combat electronics are the same is not impossible. We simply turn from training to combat, but we use the same equipment, possibly the same infrastructure.

Training simulation, like other training, is not productive unless it's cross-service, which makes the whole matter even more complicated and thus more amenable to the concept of making training and combat almost identical.

I'd like to conclude by saying the one thing I haven't mentioned that is vitally important to us, something I should put at the front rather than at the end of my talk: the fighting quality of people. This consideration is more important than anything else I have covered. As we become more and more dependent on technology, we must never fall under the illusion that somehow the fighting of any conflict will be done by machines. That would be a fatal misconception. The armed forces are made up of people, and it is the quality of people, the fighting will and capacity of people, that will always be supreme.

New Combinations—the Future of Joint Operations

General Frederick M. Franks, Jr.
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Director, Future Battle Directorate, TRADOC ODCSDOC

Just across Hampton Roads from Fort Monroe, Virginia, home to Headquarters, US Army Training and Doctrine Command (TRADOC), is Norfolk, home of the US Navy's Atlantic Fleet and the Marine Corps' Fleet Marine Force Atlantic. As carriers, amphibious ships, and submarines sail through these historic waters, their relation to the Army and to joint warfare is much different than it was during the Cold War.

That 45-year-old conflict ended, not with military victory in Central Europe, but with a brilliant performance by the armed forces of the United States in the deserts, seas, air, and space of Southwest Asia. Those watershed events, which occurred over a span of only 18 months, are examples of the rapid rate and the total unpredictability of change in the 20th Century. The US armed forces' reaction to these changes is particularly important.

In their book *Military Misfortunes*, historians Eliot Cohen and John Gooch remind us that military failure stems from the inability to learn, anticipate, and adapt to change. The changes of the past several years are exactly the type Cohen and Gooch insist we cannot afford to ignore—and we have not. In fact, the collapse of the Soviet Union, declining resources, and—from a purely predictive military perspective—Operations Just Cause in Panama and Desert Storm in the Middle East resulted in a wholesale reassessment of America's global interests. The new national security strategy was designed to protect and secure those interests.

For the military professional, the new strategy demands a fundamental change in the way we view joint operations. Because contingency missions will be the norm rather than the exception, joint thought and action will be essential. The strategy redefines traditional Cold War Service relationships, resulting in new and more relevant joint combinations distinctly different from those of the recent past. The Army may find itself working closely with carrier air and naval surface combatants rather than with the Air Force, and Marine Corps

and Army forces will find themselves in combinations like Desert Storm or the current operations in Somalia.

Compounding the challenges associated with these new combinations will be a requirement to fight as part of ad hoc coalitions or to work with traditional partners outside of existing alliance lines. In addition, mission requirements will be far more complex and diverse, running the gamut from disaster relief, humanitarian relief, nation assistance, and peacekeeping to forced-entry operations and high-intensity armored warfare all in a single theater of operations and all at the same time.

Recent operations—Just Cause, Desert Storm, Provide Comfort—provide us a glimpse of the diverse combat missions we can expect to face. The military's role in quelling disturbances in Los Angeles, aiding Hurricane Andrew and Typhoon Iniku victims, and providing help through the Provide-series of exercises and operations throughout the world, including Operation Restore Hope in Somalia, provides evidence of the expanding arena of military operations other than war.

Recent joint operations have been relatively smooth, but much remains to be done. Different means must be sought to make these new combinations work effectively. Done correctly, they will offer joint force commanders a rich choice of options with which to accomplish theater or regional missions. To exhaust the enemy's options, we need to build on General Colin Powell's Joint Pub 1, *Joint Warfare of the US Armed Forces,* and the recently published Joint Pub 3-0, *Doctrine for Joint Operations,* to develop the common body of operational thought known as joint doctrine. Neither prescriptive nor dogmatic, this common approach should allow joint force commanders extensive opportunities to join the strengths of the Services in particular combinations.

The formulation of doctrine must be based on *trust, teamwork, and training. Trust* is imperative in successful joint operations. It requires doctrine to focus on winning decisively, with the least cost to troops. Inherent in this trust is the recognition that each Service has its own ethos, born of history and proud traditions, and brings to the joint battlefield its own unique capabilities. The idea that one Service is more important than another, or is more decisive in modern combat, strikes at the heart of trust.

Seldom in war is a single factor decisive, let alone a single Service or arm. A decisive event may lead to victory or defeat, but it is usually brought on by a synergism of effects—physical, psychological, and intellectual. Any dominant player is decided by the political, military, or geographic conditions of the

moment. The very nature of war and its unpredictability defy a pattern of decisiveness or dominance based upon a specific battlefield function or arm of Service. The balance of complementary Service capabilities, tailored to the circumstances of a given conflict, ultimately prove decisive. Consequently, basing joint combat doctrine on the principle that one Service or domain is more dominant or decisive than another is hazardous, and abstract debates to the contrary are counterproductive to establishing trust.

"Joint warfare is team warfare," according to General Powell, and *teamwork* flows from trust. Obviously, joint doctrine, standardization of procedures and equipment, and other activities designed to increase joint effectiveness will enhance teamwork. But that is not enough, for individual Service doctrine must do it as well.

Joint *training,* based on joint mission-essential tasks in particular areas of operation, is the key to victory. It allows us to try out joint doctrine to see if we have it "about right," or if we need to make adjustments. It is built upon and reinforces trust and teamwork.

Joint training today must be different than it was in the past. First, it must be relevant to the mission and conditions under which we are likely to find ourselves. Joint training should be conducted at lower echelons, and exchange programs at Service schools should be expanded. In addition, the good training ideas and programs of one Service should be shared with others. Examples are the Army's Battle Command Training Program and the Tactical Commanders Development Course, both of which were instrumental in the successful performance of Army forces during Desert Storm.

Second, joint exercises must be expanded in number and scope. We must leverage existing and future simulation technology and facilities to create a joint battle space with increasing fidelity and interconnectivity. TRADOC, through its work in simulations at the National Simulation Center at Fort Leavenworth, Kansas, and the developing Strategic Simulations Center at Carlisle, Pennsylvania, is seeking ways to make this joint training vision a reality. Support to joint exercises includes planning assistance, joint observers, technical expertise, and training simulation assistance.

Army units are applying innovative joint planning in contingency operation scenarios at the National and Joint Readiness Training Centers. The entire focus is on joint force projection, an approach that represents a distinct departure from the Cold War scenarios used at the National Training Center at Fort

Irwin, California. The Army's III Corps, for example, recently used a scenario of a joint task force involved in seizing an island, a scenario similar to one I Corps at Fort Lewis was conducting at the Joint Readiness Training Center at Fort Chaffee, Arkansas.

In their preparation for an operation, division planners must address a number of joint concerns—including deployment considerations, air support, and port capacities—as well as incorporate joint special operations task forces, a clear lesson from Desert Storm. This type of imaginative training at the unit level creates among soldiers and leaders a joint mindset and a keen awareness of the importance of joint operations under a force projection strategy.

TRADOC is ensuring that Army doctrine is equal to the challenges of future joint operations. To that end, Army Chief of Staff General Gordon Sullivan has charged TRADOC to lead the Army though the intellectual changes required to meet the challenges of a force projection army employed by joint force commanders in joint and combined operations.

TRADOC's initial, but by no means exclusive, effort is the 1993 revision of Field Manual (FM) 100-5, *Operations*, the manual that established the Army's combat doctrine. FM 100-5 is the Army's keystone operations manual from which flows subsequent doctrine, tactics, and procedures. Its doctrinal focus is on operations as a whole. As a force projection army, joint thinking must be at the heart of everything the Army does. The change from AirLand Battle does not mark that concept's demise, nor a rift between the Army and the Air Force. Rather, it revalidates AirLand Battle precepts and recognizes that the new national security strategy demands increased joint operations.

The Training and Doctrine Command, along with the Air Force's Air Combat Command, the Naval Doctrine Command, and the Marine Corps' Combat Developments Command, is also an active component of the Air-Land-Sea Application (ALSA) Center. The Center represents further recognition that future US military operations will be more joint than those of the past—that new combinations will be employed. The ALSA Center is currently working on a number of joint issues, including multi-Service tactics, techniques, and procedures for forced-entry operations and operational concepts for the Joint Surveillance and Target Attack Radar System. With the establishment of the Naval Doctrine Command in Norfolk and the Air Force Doctrine Center at Langley Air Force Base complementing the Marine Corps' Combat Development Command's

Doctrine Division at Quantico, a joint and multi-Service doctrine focus is rapidly emerging in eastern Virginia.

Another focus on "jointness" is TRADOC's role as the Army's executive agent for support to combatant commanders-in-chief (CINCs). The program provides a means for TRADOC to respond to issues that are of concern to warfighting CINCs through the venue of annual visits by the TRADOC commander and his CINC support team. The program seeks solutions to joint issues as well as to Army-related issues that fall within TRADOC's domain. More than 500 CINC support actions have been worked for nine separate CINCs and their subordinate component commands.

Not only has the nature of battle changed, but the role of the armed forces may be in the process of changing before our very eyes. No one has the clairvoyance to predict with any accuracy what the end may be. What has remained constant, however, is the requirement for the armed forces of the United States to fight and win as a joint team. The military force that emerges from this transition must be relevant to the political, military, fiscal, and environmental conditions under which it will be called upon to serve. To meet that challenge successfully, it will have to be a versatile, highly trained joint force that is ready for virtually any contingency.

The key is building a solid foundation of joint doctrine upon which to base the trust, teamwork, and training necessary to succeed in the conduct of joint operations during war—and in operations other than war. The nation deserves no less, and our citizens who send us their sons and daughters rightfully expect it. They will not tolerate the divisive inter-Service arguments of the past and will not pay for wasteful redundancies.

One thing we cannot afford to do is rob ourselves of a future by choosing to view the present through the lenses of the past. Much has been done already in all the Services and within the joint community. The Army is making its contribution, but much remains to be done. New combinations are required. Above all, it must be a joint team effort, based on trust and reinforced by training.

The Dimensions of Threat

Brigadier General Claudia Kennedy
Director of Intelligence, J2, Forces Command

Threats, in short, exist; one might wish them away, but they remain. To insist upon precise definition as a prerequisite for prudent planning is to ignore the conditions under which they exist, the ever-changing circumstances of people and nations, and the dynamics that propel us into an uncertain future.

GEN Gordon R. Sullivan
Chief of Staff, US Army

Operation Desert Storm and the end of the Cold War have left us with a fluid threat picture. The old way of looking at potential adversaries measured against the monolithic Soviet threat is gone. Threats must now be defined in terms of capabilities across a spectrum of potential conflicts, from global war through economic competition. A nation's power is no longer measured solely in military terms, but also in terms of basic resources, economy, science and technology, universal culture, and national cohesion. Because of the global spread of advanced weapons and technology, we must keep abreast of weapons developments on a worldwide scale, without regard to specific users. Considering these additional factors and how they fit into an altered security environment, it may be time to expand the Army's focus in threat development.

AN ALTERED SECURITY ENVIRONMENT

Operation Desert Storm and the collapse of the Soviet Union heralded several emerging trends that portend changes in the relative balance of power among nations and among alliances on a worldwide scale.

The Former Soviet Union (FSU). Although the Warsaw Pact is gone and the danger of general (nuclear) or major conventional war in Central Europe is reduced, the threat of conflict involving the former Soviet Union remains. Within the confines of the FSU, old nationalistic, ethnic, and religious rivalries have resurfaced after more than 70 years of Soviet-imposed order. Already, armed conflicts have erupted in the Caucusus republics—Georgia, Armenia, Azerbaijan—and in Tajikistan. The potential for conflict remains between Russia

and the Baltic republics over nationalistic and economic aims. More ominously, Russia and the Ukraine are disputing control over nuclear weapons, the Black Sea fleet, and the Crimea. Despite the splintering of the Soviet Union and its economic miseries, Russia remains the most potent military force in Eurasia. Four of the FSU republics—Russia, Ukraine, Belarus, and Kazakhstan—remain strategic nuclear powers. If any of these states revert to hard-line political control and attempt to revive the policies of the Soviet Union, they could pose global as well as regional threats. A second danger is Russian involvement in ethnic conflicts outside the FSU under the guise of ethnic solidarity; in the short term, possibly embroiling Russia in supporting its Slavic cousins in Moldova or Yugoslavia. Economic instability adds to the threat posed by the nations of the FSU as the they attempt to gain hard currency by exporting weapons and technology worldwide.

Regionalism. The bipolar world of West versus the Communist Bloc is gone. In its place is one military superpower—the US—and three economic centers of power—the Americas, Europe, and the Pacific. Conflict at this level need not be along Cold War lines. Instead of choosing sides in a US-USSR confrontation, nations now are basing their military, economic, and diplomatic efforts on regional concerns. Conflicts in these areas may be based on ethnicity, religion, and history, such as Syrian or Iraqi expansionism in the Middle East, or Libyan forays in western Africa. Potential conflict areas that may threaten US and allied vital interests over the next decade are shown below.

Potential Conflict Areas

REGION	CONTENDING PLAYERS	CAUSES
Korea	North Korea, South Korea, allies	Regime survival, power shift to south
Caucasus	Russia, Georgia, Armenia, Azerbaijan	Instability, ethnics, nationalism
Kurdistan	Turkey, Iraq, Iran, Armenia	Ethnics, nationalism, water, regional dominance
Balkans	Serbia, Greece, Turkey, Albania, Slavic states	Ethnics, regional dominance, Serbian survival, Greek security
Andean Ridge	Colombia-Peru-Ecuador-Bolivia narcoinsurgents	Instability, regime survival
Persian Gulf	Iraq, Iran, Saudi Arabia, Kuwait, Gulf Cooperation Council	Regional dominance, religion, regime survival, economics
Palestine	Israel, Syria, Arab states	Domestic instability, Arab prestige, religion

Ethnic Conflict. Ethnic conflict is on the rise and will increase unless artificially created national boundaries and ethnic/religious identities are resolved in unstable regions of the world. The Soviet Union suppressed ethnic groups and quashed nationalistic efforts within its borders; without its firm hand, ancient conflicts have already erupted between Armenia and Azerbaijan and in Georgia, Moldova, and central Russia. Borders in the Middle East and Africa, still based on divisions made by European states, are another source of ethnic and religious tension. Eruptions will likely continue in such regions as Afghanistan, Kurdistan (split between Iran, Iraq, Syria, and Turkey) and west Africa, where tribal boundaries rarely match political or national ones. Religion is a strong component of these conflicts, particularly the contests between the Islamic and non-Islamic worlds, between fundamentalist and secular, and between Orthodox and Roman Catholic.

Weapons Proliferation. Weapons and weapons technologies are spreading worldwide at an unprecedented rate. First, the collapse of the Soviet Union freed up a significant amount of weaponry and technology for export. Russia and other FSU states are aggressively marketing weapons to acquire hard currency. Without the pressure of the superpower rivalry and with the erosion of COCOM (Coordinating Committee on Export Controls) and MTCR (Missile Technology Control Regime) restrictions, advanced technology is available worldwide. As an example, some nations that lack the technological base to develop ballistic missiles on their own, such as Libya and Syria, are buying the systems or the technology to produce advanced weapons from such nations as Russia, China, and North Korea.

The Gulf War was viewed by many as a high-technology conflict. The principal lesson learned is that you must have at least some high-technology weapons to compete on the battlefield. Few nations can afford to modernize their entire force; however, almost every nation can purchase some advanced weapons or technology. Specific items of high technology are determined by perceived regional threats and economic constraints. In terms of modeling threats, we can no longer model against the latest generation of Soviet weaponry. In any potential conflict, pockets of high technology and some state-of-the-art weaponry are likely. Because many nations are now exporting arms and high technology, in any future conflict we can expect to face a foe armed with weapons from several sources. The Gulf War provided a good indication of which high-technology weapons yield the biggest payoff for the money invested.

Of heightened concern to Army leadership and planners are theater ballistic missiles (TBMs) and nuclear, biological, and chemical weapons. These weapons can be used to deny US forces entry into a theater or to degrade their ability to build up strength once deployed into a conflict area or against rear-echelon infrastructure, thus impeding prosecution of the campaign. They can inflict mass casualties, civilian as well as military, while causing indiscriminate destruction and collateral damage wherever used. The effects on world and US public opinion and on our will to fight give these weapons importance far beyond their tactical value.

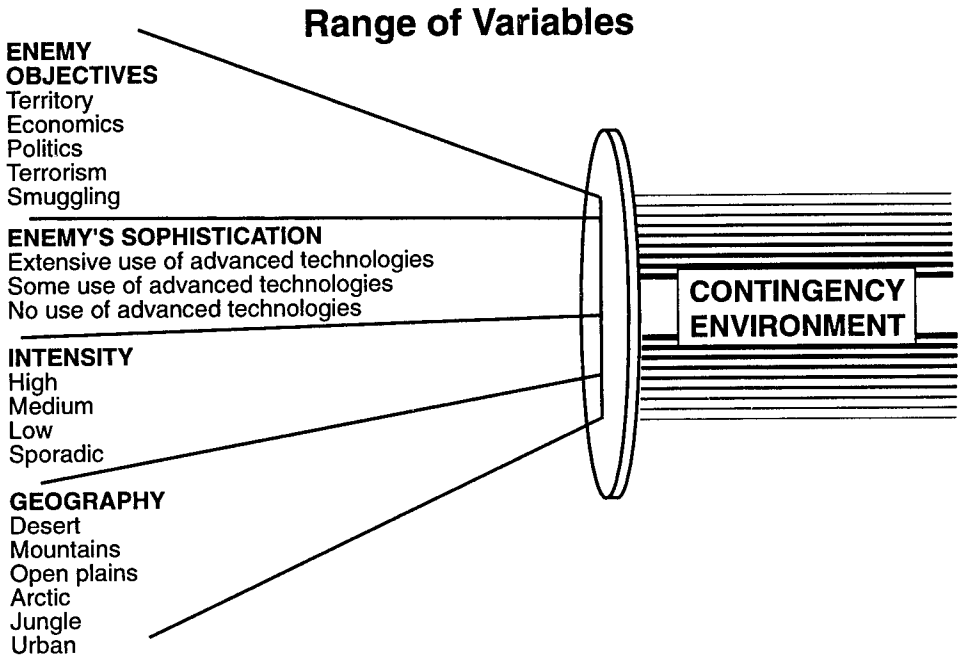
Rapid Technological Change. The global economy has been revolutionized by changes in technology. Computers, automation, telecommunications, and space-related technologies have altered how goods are produced and distributed. As the rate of change increases and the time to produce new generations of basic machines decreases, economic stability will fluctuate. The role and relative economic power of various regions are dynamic—the Middle East's supply of oil may turn out to be less important than the Far East's labor supply. Additionally, improvements in technology may have indirect effects on military strength: many advanced technologies, particularly in electronics, advanced materials, and manufacturing techniques, can be used in military applications.

Proliferation of Information. The spread of communications and information devices has revolutionized how news is spread and used. The new information environment is pervasive and near real time. Because global telecommunications and news broadcasting can provide instantaneous reporting on conflicts, any view of future requirements and potential conflict environments must consider the impact of the CNN effect. From a strictly military point of view, this means not only fighting in a fishbowl, but considering telecommunications and mass media as tools of warfare to be used by threat governments and entities. From a larger point of view, the spread of television, faxes, hand-held video recorders, computers, and cellular telephones is causing an unparalleled rise in political consciousness around the world. Entire classes of people who decades earlier would have been silent are being brought into the decision-making process through information proliferation. Although this "global village" phenomenon is opening the world and making the spread of news and information more rapid, it is not turning the world into one community.

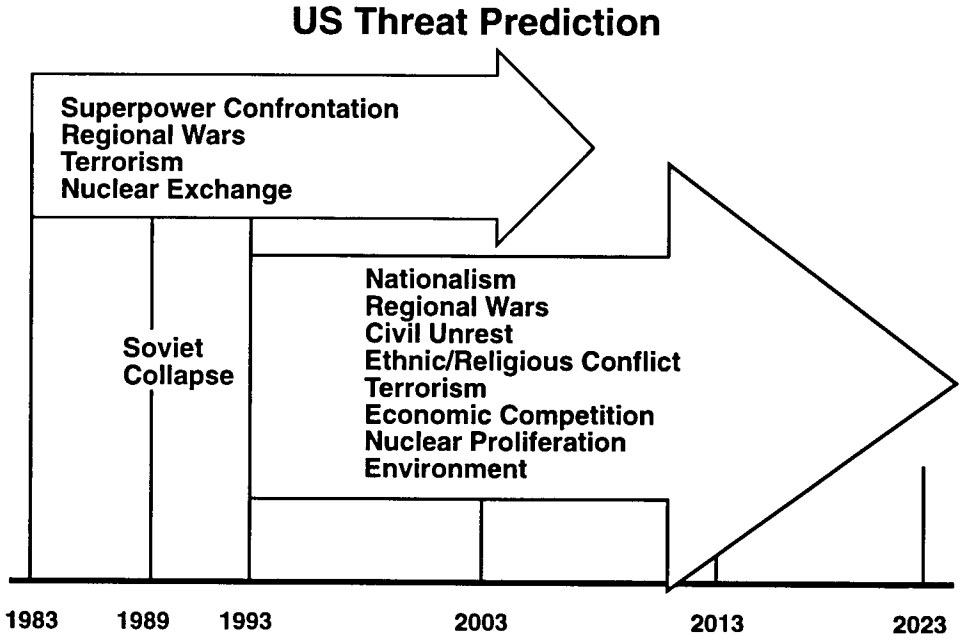
CONFLICT ENVIRONMENTS

The collapse of the Soviet Union has led to a multifaceted threat environment. The world is now paradoxically a more unstable place than when the US and Soviet Union were engaged in a superpower rivalry. As never before, the environment in which the Army will operate is intricate and variable. The range of variables includes the enemy's objectives and will to fight, the enemy's sophistication, the intensity of the conflict, and the geography of the conflict area. As shown in the following figure, each of these variables spans a range of options. They are blended to produce unique situations and contingencies for examination. The nature of the threat in future conflicts will most likely involve military responses that support other national elements of power, rather than classic military-on-military confrontation. This leads to a wider range of possible contingencies that the Army must consider.

Sometimes it is helpful to review past threat predictions. In both 1963 and 1973, when talking about 1993, we predicted a continuing global threat from the Soviet Union, with China, North Korea, Cuba, and North Vietnam as its principal client



states. The Soviet Union dominated our attention, principally because it possessed weapons of mass destruction. Our threat predictions for 2013 do not focus on a single dominating state, but rather on a series of conditions through which threats to our national interests will develop.



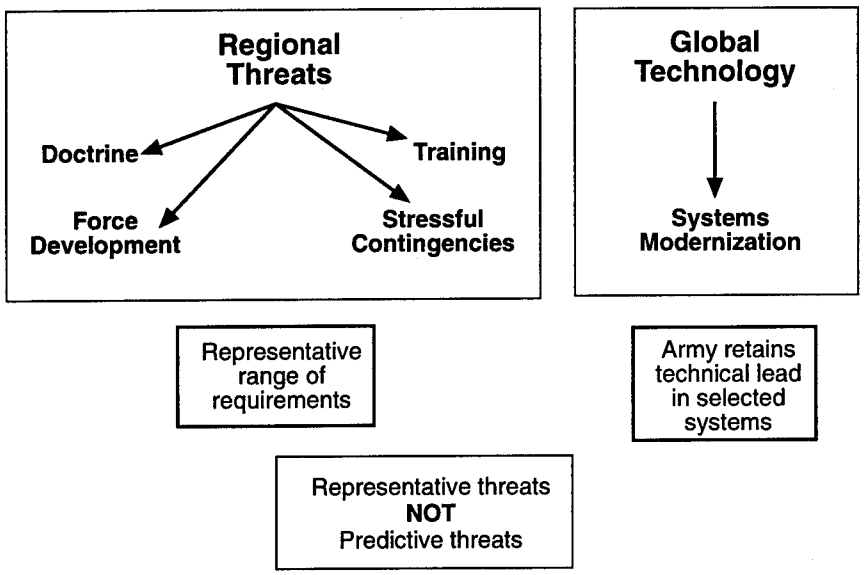
TOWARD A NEW THREAT MODEL

The threat model used until recently was relatively simple: the Soviet Union. It provided an unambiguous, symmetrical, monolithic threat for planning—"one threat fits all." As we move into the unsettled post-Cold War security environment, more complex threat descriptions are required. Models currently used project 20 years: Combined Arms Command (CAC) models, used to support training and exercises, project approximately 1 year; Joint Chiefs of Staff illustrative planning scenarios, used to support operational and contingency planning, examine 5 years; and Battlefield Development Plans (BDPs), used to support modernization, project 10 to 20 years. The BDP threat is the most inclusive, describing the threat's size, state of modernization, and rate of change, and attempts to answer the questions: "How well does he fight?" and "How will he attempt to improve his warfighting capabilities?"

The current threat model focuses on regional threats. Compared with the old Soviet threat model, it displays a representative range of requirements tailored to specific circumstances. Note that the new model *represents* threats; it does not

predict threats. Furthermore, the current model looks at technology on a global perspective, based on the premise that no matter what the contingency, any potential enemy can be counted on to have at least some high-technology weapons. Therefore, the new model examines weapons technology separately from regional threats in order to ensure that the Army retains the edge in weapons technology.

Threat Model



As future threats to our nation develop, our leaders will have the full range of military response options to meet those threats. The new threat model better supports planning across the operational continuum, from civil and humanitarian actions through global nuclear war.

Clearly, developing scenarios, models, and threat assessments under this new model will be a more arduous process for the intelligence community. Certainly, it will be more frustrating to commanders and operators who prefer to deal with the world in terms of black and white. However, it is imperative that we look at today's threat in shades of gray:

> *One thing we cannot afford to do is rob ourselves of a future by choosing to view the present through the lenses of the past.*
>
> *GEN Frederick M. Franks*
> *Commander, TRADOC*

Peacekeeping: A Canadian Perspective

Brigadier General Ian Douglas
Canadian Army

I cannot stress enough that peacekeeping operations, as they have existed for the last 40 or 50 years, are nonexistent. We have to look at things from a different perspective now.

BG Douglas in "Defense News," Aug 2-8, 1993

As I completed a review of peacekeeping operations upon my return from Central America in 1990, it was obvious that no formal definition of peacekeeping operations exists. Until a few years ago, peacekeeping meant something, but now the definition has become a piercing question, the answer to which will weigh very heavily on whatever the operation turns out to be. Peacekeeping was not in the UN charter and seems to have grown out of Lester Pearson's[1] successful attempts to create a force for the Middle East that would hold the factions apart militarily, with consensus, while political leaders and diplomats worked out a solution. Interestingly, that force is still there today.

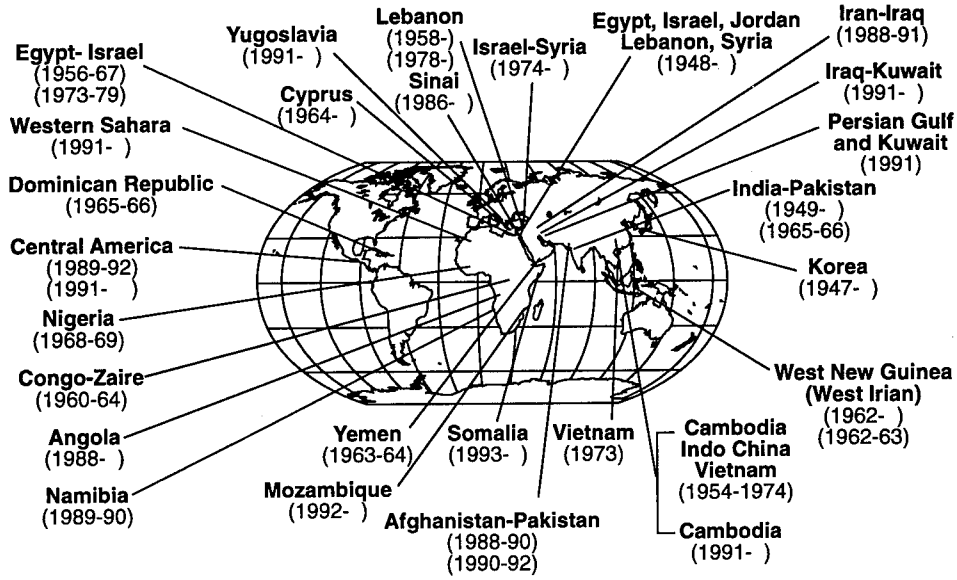
As a quick historical note, Canada has participated in numerous peacekeeping missions, shown in the figure on the following page; the one to which I refer is the UN Truce Supervisory Organization. Again, historically—and it seems as if the wheel has turned full circle—it was the failure of the UN Military Staff Committee in 1948, given the Cold War, to achieve any consensus in regard to using UN standby forces to achieve peace. That failure caused Mr. Pearson and the remainder of the UN to adopt the *ad hoc* approach which, to date—certainly up until 1990—has worked so successfully. The Cold War, therefore, forced military planning decisions and operations to be conducted *ad hoc* by a very small group of officers who acted as military advisers to the Secretary General.

Until the end of the Cold War, peacekeeping operations were relatively simple. I say this from the perspective of having been a brigade commander who put together the Canadian signal battalion for the Iran/Iraq force in 1988. I remember, during the negotiations phase, how Canada would contribute, agreeing with our chief of staff that we would both resign if our

1. Canada's Ambassador to the UN in 1948

troops were forced to go in unarmed. We convinced our political leaders—and the UN was told—no arms, no troops. So they went armed. Nevertheless, the next year I was nearly forced to provide an unarmed service battalion for Namibia. Even when faced with the task of pulling together a six-country observer force in Central America in 1989 (and then being forced to turn it into a peacekeeping force as demobilization of the Contras became a reality), we were still working with a pre-1990 mentality that peacekeeping operations, with few exceptions, were relatively benign activities.

Canadian UN Peacekeeping Forces' Observer Missions and Non-UN Missions



Over the years we had learned many lessons from our experiences, but we had not formalized them into any doctrine. Indeed, peacekeeping operations were just another operation, and battalions not assigned to NATO rotated through Cyprus every three or four weeks. In 1988, however, as consensus in the Security Council seemed easier to achieve and peacekeeping activities broadened, we obviously had to better focus our attention and handle the situation more formally and carefully. Thus J-3 peacekeeping operations, with the deputy for peacekeeping operations as the head, were formed as a separate directorate in our national defence headquarters. At that time, a liaison officer—an Army colonel—was seconded to External Affairs, our equivalent of your Department of State, as the head of the

peacekeeping section. At the same time, relationships and procedures were formalized and streamlined. Indeed, the political-military team has now become standard operating procedure.

At the same time in the late 1980s, a series of criteria were developed against which the facts of any proposed participation would be measured (See below). While all of the criteria seem reasonable enough as well as helpful in doing the estimate, the only criteria to which a clear or perhaps even a fuzzy 'yes' was essential was the third criteria. Indeed UN Observer Group in Central America, my Central America mission, had a mandate upon deployment that could only be described as mission impossible (which clearly contradicted the first criteria), although it did allow the UN presence to be established. This in itself had been prevented for eight years by one or more of the interested parties. Ultimately, it also allowed a mandate change so that the demobilization of the Contras could be achieved. This brief review of these criteria show the evolution of peacekeeping operations into operations that were becoming very risky.

Peacekeeping Criteria

- ✓ A clear and enforceable mandate exists.
- ✓ The principal antagonists agree to a cease-fire and to Canada's participation.
- ✓ The arrangements are likely to serve the cause of peace and lead to a political settlement in the long term.
- ✓ The size and international composition of the force are appropriate to the mandate.
- ✓ Canadian participation will not jeopardize other commitments.
- ✓ A single identifiable authority can competently support the operation.
- ✓ Participation is adequately and equitably funded and logistically supported.

Terminology is a problem. Canada's position is that we fundamentally do not disagree with the agenda for peace presented by UN Secretary General Boutros Boutros-Ghali to the UN in June 1992. However, our experiences in interoperability tell us that we had better get our lexicon straight. As an example, in the late 1970s I served as XO of 4 Canadian Mounted Brigade producing joint SOPs, with VII (US) Corps on one side of the boundary and II (GE) Corps on the other. My

personal opinion (and that is why I suggested MacKinlay and Chopra's *Second Generation Multinational Operations*[2] as a preread) is that we must ensure that levels can be formally and quickly associated with the level of military force, defensive or offensive, which is required. I like the approach, indeed have discussed it with John MacKinlay, and suggest that it goes a long way to logically tackling this thorny issue of what to call an operation and what a military force does if called to execute the operation.

Finally, I will discuss Canadian lessons learned in peacekeeping operations in the following areas: the political/diplomatic process, which refers to those steps taken by the UN and individual nations to identify and initiate a commitment to a peacekeeping mission, and the military planning process, which essentially embraces the following phases:

- Warning Phase - Providing early definition to a possible military commitment.
- Preparation (Mounting) Phase - Getting a force ready to deploy.
- Deployment Phase - Moving to a mission area.
- Employment (Sustainment) Phase - Conducting operations in a mission area.
- Redeployment Phase - Withdrawing a force from a mission area.

Together these phases form the standard military concept of operations followed by the Canadian forces for all peacekeeping commitments.

THE POLITICAL/DIPLOMATIC PROCESS

Closely monitoring possible areas of interest for UN peacekeeping missions and gaining an early national policy decision for involvement in these potential areas are especially important. Maintaining good channels of communication with UN New York (UNNY) is also essential. The presence of the Canadian mission to the UNNY continues to be critical in ensuring a timely flow of current information. Adhering closely to accepted guidelines that act as the framework for making political

2. John Mackinlay and Jarat Chopra, "A Draft Concept of Second Generation Multinational Forces 1993," The Thomas J. Watson, Jr. Institute for International Studies, Brown University, 1993. The authors categorize operations into three levels, with traditional peacekeeping at the lower end, peace enforcement operations like Kuwait and Korea at the high end, and everything else—"beyond peacekeeping"—in the middle.

decisions to involve Canadian peacekeepers in a particular mission area is vital.

These guidelines are articulated in the following questions: What is the mandate? Is it achievable? In what setting will the mission take place? Do one—or all—of the principal antagonists agree to a UN presence? What is the political context? Have other peaceful means to resolve the situation failed? Is this operation likely to serve the cause of peace and lead to a long-term settlement of the problem? Does Canada have the forces available to fulfil the role that the UN has proposed for us? Will this operation jeopardize other Canadian forces' commitments and tasks? Is the peacekeeping force that is being proposed adequate and appropriate to the mandate? Are the lines of authority clear? Is the mission adequately funded? Is it logically supported? What is the risk to the peacekeepers? Is it an acceptable level of risk? What are the rules of engagement? Are they clear? Are they appropriate? Does this peacekeeping operation serve Canadian foreign and defence policy objectives?

Failure to pay attention to the answers to these questions can lead to faulty decision making and generate significant postcommitment downstream problems. For example, failure to address a proper funding arrangement for our UN commitment in Bosnia-Herzegovina generated considerable short-term financial concerns for the Canadian forces. With this same commitment, a failure to ensure that key antagonists—specifically the Bosnian-Serbs—were in agreement with the UN deployment caused an embarrassing and costly delay in the final deployment of our forces.

Also extremely important is for policymakers to establish a clear "end-state" for the mission, keyed to a date. This must be done sufficiently early in the planning process to allow the military to properly address sustainment issues.

THE MILITARY PLANNING PROCESS

During the warning phase, establishing realistic options for force structures that could be deployed to a mission area is required. Close liaison must be maintained to UNNY to gain an early indication as to what strength and type of military force may be requested from Canada.

During the preparation phase, an early physical national reconnaissance of the mission area is needed in order to formulate and complete workable military plans. A clear concept of operations, identifying national tasks and areas of responsibility, must be established early by the UN force commander. Also important is to identify interoperability issues with other

national contingents that are to be deployed with, or in close proximity to, Canadian forces. At this time, normal general-purpose combat training must be augmented with training in mission-specific skills, including operational, geopolitical, and cultural concerns. For example, mine training is critical for operations in many mission areas such as the former Yugoslavia and Cambodia.

In this phase, individuals and units identified for UN duty must be given adequate warning and direction, through detailed orders, to ensure they are properly briefed, trained, and equipped for the upcoming peacekeeping mission. They also must be screened carefully to ensure their suitability for peacekeeping duty and thus reduce the necessity for early repatriation from mission areas. The organization of departure assistance groups to assist in this screening process have proven invaluable. The commander must be assured that all his personnel have been screened for every item from personal finances to their particular family situation.

During the deployment phase, the UNNY's Movement Control Center must provide the required direction to execute strategic moves (generally national moves to and from the mission area) in a timely and efficient manner. Movement assets must be identified and secured early to facilitate proper national movement planning. Early identification and definition of the UN logistics concept for a mission area is essential at this time. Canada has learned that it often takes more than four months for the UN support system to become fully established. Thus it is necessary for initial Canadian deployments to be fully self-sufficient.

A national support organization must be in place early on in the process to coordinate third- and fourth-line support needs. Peacekeeping units should have third-line medical elements attached to them to provide necessary coverage in high-risk mission areas. In some mission areas, this support must include surgical teams; and reliable strategic and tactical communications must be in place early. Satellite technology has proven invaluable for the maintenance of a national communications link with various missions in which Canada is currently deployed.

During the employment (sustainment) phase, one must ensure that the various levels of UN mission headquarters provide reliable overall command and control. This command and control must adhere to the recognized and agreed upon chain of command. Regular staff assistance visits from national headquarters staff are important during this phase. They facilitate direct discussion and resolution of national problems

involving such subjects as force personnel and equipment issues.

The redeployment phase must involve the issuance of orders in a timely fashion. In the case where redeployment of the force represents the termination of the commitment, ensuring that the UN has acknowledged this fact and has identified, in a timely fashion, a replacement force from another country is important. Proper handovers can only occur if replacement contingents are sourced and confirmed early. When terminating participation in a mission, and thus executing the final redeployment, a clear and comprehensive plan for closing out of the mission area and ensuring the orderly return of personnel, materiel, and equipment is essential.

In conclusion, I have just touched upon or highlighted some areas of concern on which we are currently working. I would like, however, to put a personal spin on "UN bashing," which has become a popular pastime. As alluded to previously, when I deployed with ONUCA in December 1989, the military advisory staff to the Secretary General comprised four officers. The G1/G4 functioned on a different chain of command from the G2/G3; therefore, to understand why a problem existed is not difficult. In 1990, in a Canadian forces study, I created a "strawman" called the UN multinational force. While the proposal was indeed a strawman, it suggested areas that are now being seriously studied: a substantially enhanced military staff to the Secretary General, for example, which encompasses all staff functions, and which has unity of command as its fundamental structural principle. This would allow proper command and control of operations, especially if based upon a resource data base that would allow timely and well-informed contingency planning to take place.

I personally am encouraged by the bilateral and multilateral work that is going on in this area. Indeed, at the bilateral level, a Canadian political-military team has recently met with their US counterparts to consult about peacekeeping.

Peacekeeping is current, real, and certainly very difficult. If recent history is any indication, we can safely assume that the developed countries, especially yours and mine, will continue to be involved. We must, therefore, continue to cooperate in this important arena so as to anticipate the many challenges that the future holds in store.

The Future of Doctrine

Brigadier General Lon E. Maggart
TRADOC Deputy Chief of Staff for Doctrine

An Army is what it... does. Doctrine is... what we say we are capable of [doing]. It precedes both practice (training) and operations... and must be reviewed and updated continuously to ensure that Army personnel and units remain at the forefront of thinking on how to employ forces.

General Gordon R. Sullivan

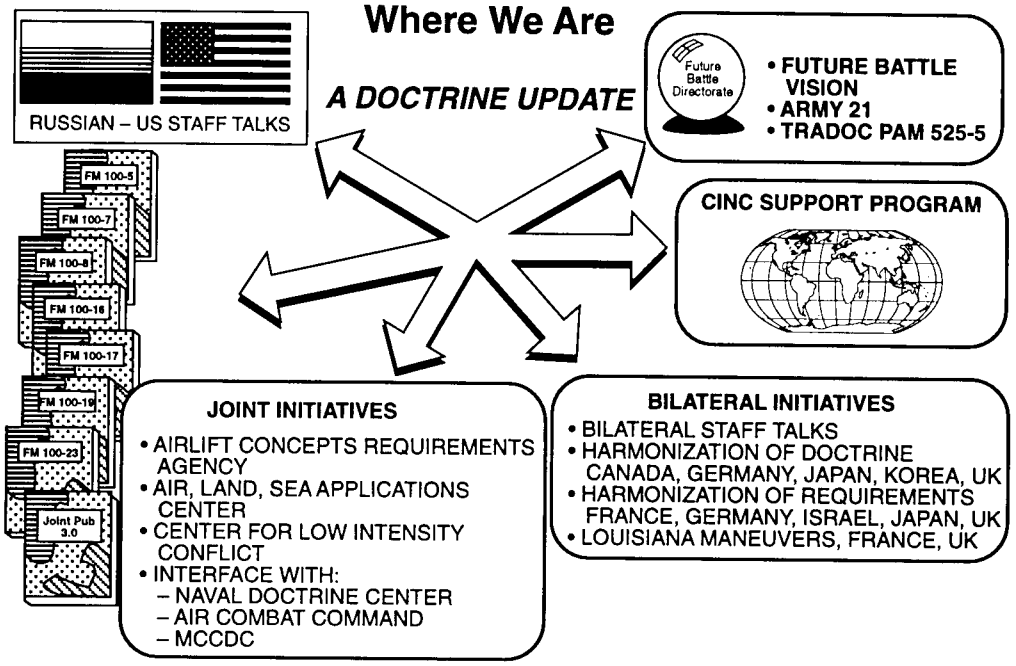
The United States Army is a doctrine-based institution. Its doctrine provides a common, flexible framework within which soldiers think about and debate the issues of their profession. Doctrine provides a holistic basis for the institution to incorporate new ideas, technologies, and organizational design. It also allows leaders to become the adaptive, creative problem-solvers that today's military operations increasingly require as the Army moves toward a new century.

To bridge intellectual, physical, and technological change, doctrine must be dynamic. It must be predictive, not reactive; authoritative, not prescriptive. Looking to the future, it must serve as the catalyst for change, explaining that change in terms that individual soldiers and leaders can understand.

If doctrine drives changes in training, equipment, and structural requirements, then it must reflect a sound, proven foundation. Changes in the strategic environment, lessons learned from recent experiences, and the significant impact of new warfighting technology have profoundly influenced TRADOC's major thrust for doctrinal revolution, both for the Army and in joint applications. The 1993 version of FM 100-5, *Operations,* is the Army's first step in creating an evolutionary doctrine designed to address the much wider range of missions facing the Army in the future.

The latest version of FM 100-5 has generated a new series of field manuals that amplify the Army's view of the broader roles and missions its units will execute in the future. TRADOC is also involved in other relatively new activities such as the Russian-US staff talks. In late July, the first Russian main staff contingent discussed peacekeeping at Fort Monroe. Numerous joint initiatives are being worked; ongoing dialogue with our

allies continues; the CINC support visits have been mutually beneficial; and DCSDOC has created the Future Battle Directorate to address concepts and issues for the Army of the 21st Century.



We are seeing payoffs in other areas as well. In the past, writing doctrinal manuals was a time-consuming task that principally fell to a handful of subject-matter experts who used their experiences as a doctrinal basis. Capitalizing on emerging technologies will propel us into a new era. Information-age technology, which utilizes simulation, imaging, and compact disks (CDs), is the key for ensuring that we produce "living" doctrine. Information-age technology will have a dramatic impact on doctrinal development.

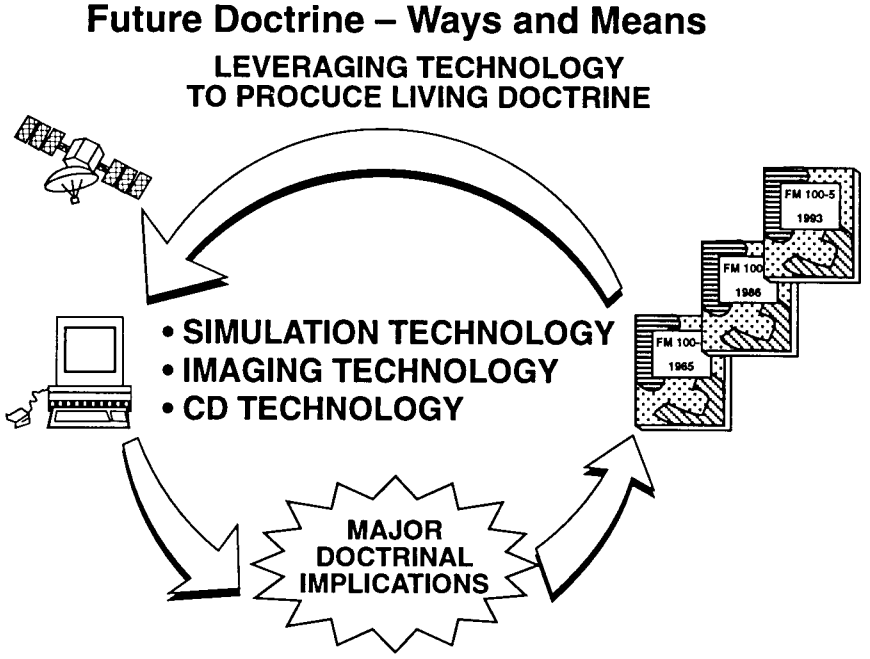
Doctrine will be greatly influenced by using simulation as a test bed to combine the capabilities of virtual reality (SIMNET [simulation network]), constructive simulation (CBS [corps battle simulation], BBS [battalion-brigade simulation]), and live training (NTC [National Training Center]). The nexus of these three capabilities could well represent the most powerful tool available to the Army. If a joint or combined exercise could be constructed that would simultaneously operate in these three venues, the Army could conduct front-end doctrinal

analyses using real people, real missions, and real equipment. At least two years of time, energy, and brain power could be saved by not having to sort through the doctrinal process based on experience. Information-age technology would allow us to overlay concepts onto this process, observe what is happening, test and refine the concepts in a realistic environment, and draw doctrinal conclusions for timely publication.

Another notion we can use to our advantage is multispectral imagery. Desert Storm was a test bed for this new imagery. Providing commanders with near-real-time imagery of their sector is a powerful operational planning tool. It can also be incorporated into exercises at all levels to test concepts on real-world geography, to evaluate different battlefield frameworks, and to teach doctrine in different environments. In the past, we have taught our doctrine and tactics using topographic maps (the sand table) and canned scenarios. Leaders and soldiers would gather around to discuss their respective missions. Today, technology has provided the capability to dynamically change the way we use the sand table. We can bring to a classroom or exercise site an instantaneous satellite picture of a live situation on the ground with actual forces. Soon, technology will allow leaders and soldiers to train in a real-time, real-world scenario. In addition to the obvious impact on planning, imaging technology will have a profound effect on relevant and realistic training.

As we test new ideas and concepts, their doctrinal relevance must be incorporated into appropriate manuals on a timely basis. Just as simulation, imaging, and interactive communications networks are helping to unravel the complexities of the modern battlefield, the microprocessor and linked communications networks are assisting doctrine developers to respond to changing world events and the Army's increasing variety of missions. The establishment of electronic links among the Army's learning centers, major commands, doctrine developers, operational planners, and subject-matter experts allows expertise and experience to be shared, lessons learned from recent operations to be captured, and consensus on developing doctrine to be formed. Building on the lessons learned from our simulation-live training interface, we can develop a doctrinal concept, staff it electronically throughout the Army, and refine it in a matter of weeks. We can then electronically transmit it to the operational community for test and evaluation and further refinements. Subsequently, the concepts can be inserted back into the simulation-live training loop and final adjustments made. At this point, the TRADOC commander could literally press a button to establish a concept as current doctrine. It

would then be a simple process to disseminate the current doctrine throughout the Army using CD-ROM technology. The same process would apply to changes and updates, significantly increasing their availability to the operating units.

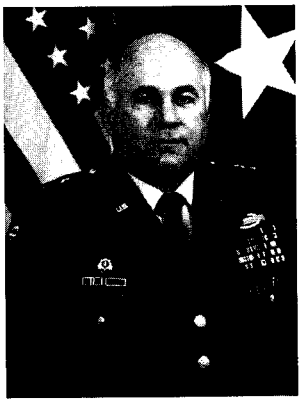


While TRADOC is in the initial stages of implementation, electronic staffing has reduced the time for developing a new manual from three years to fewer then eight months. By providing doctrinal guidance to plan activities prior to the publication of a manual, this procedure will greatly benefit operational planners.

Army doctrine will provide the guiding light as we move toward the 21st Century and beyond. It will guide our training, organizational framework, and materiel acquisition. Timeliness, relevance, and realism will be the essential ingredients to creating a living, dynamic doctrine. TRADOC is at the forefront in providing leaders and soldiers with the doctrinal foundation required today and in the future.

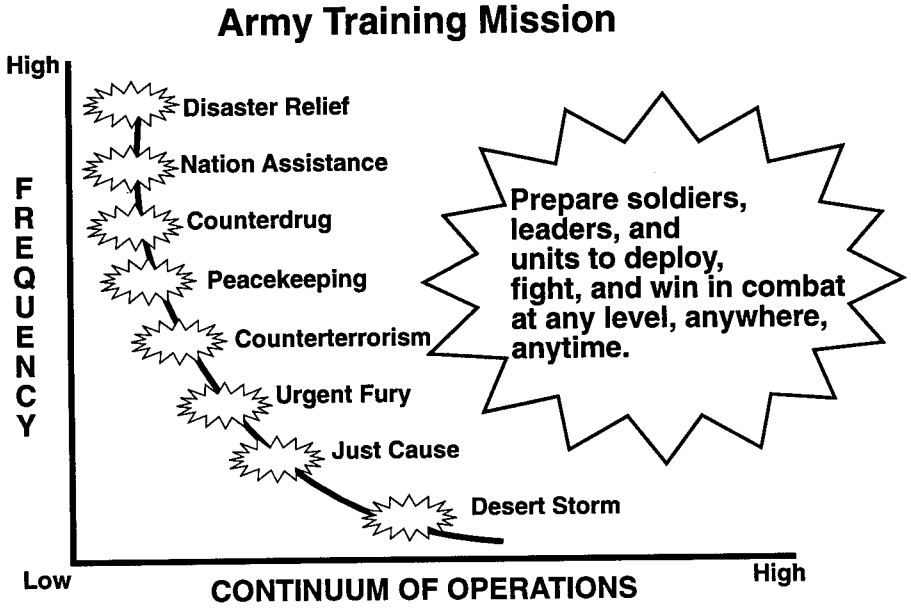
Training for Future Conflict

Major General Dennis Malcor
TRADOC Deputy Chief of Staff for Training



Many changes are taking place in our armed forces. However, the need for a trained and ready Army will not change now or in the future. The American people expect the Army to know what it must do and to accomplish it through training. The Army's qualitative edge in training and its investment over the years in the training base were as important as technology was to success in Operations Just Cause and Desert Storm. This will continue to be true in the future.

The nature of future conflict will be of primary concern to the Army as it trains for the future. Specifically, we are looking at the demands of a force projection Army and the versatility needed and where we should be headed. The Army's training mission drives everything the Army does in our schools and in our units in the areas of training and leader development. The focus is combat. If we conduct our training and leader development properly and we train to warfighting standards, the result will be soldiers and leaders who are prepared to conduct operations other than war, like disaster relief and peacekeeping, while remaining combat-ready.

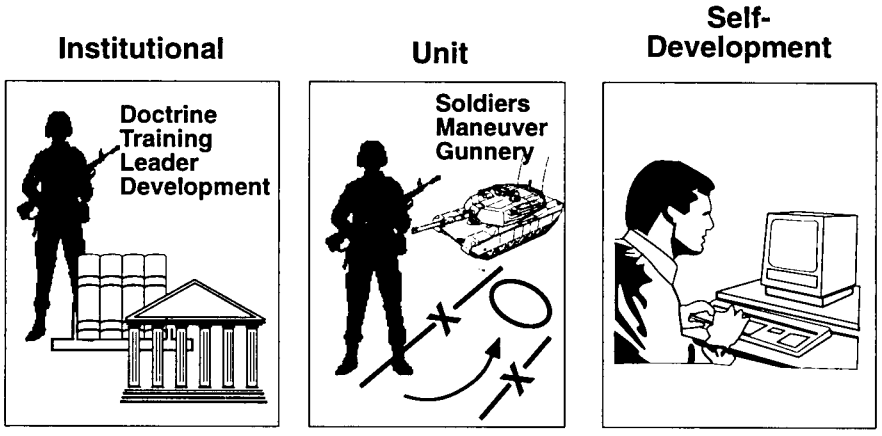


For most of the past 50 years, the Army's training system focused on the Cold War threat. As a result, we developed a very solid education and training system, much of which will not need to change as we go into the 21st Century. However, times have changed and we are in a new era. Not only has the predominant threat for which we trained disappeared, but a new national military strategy has been issued, expanding the roles and missions of the Army and creating a more demanding training challenge.

As a result of these events, the Army faces a broader range of missions and unpredictable threats while at the same time coping with a greatly reduced budget—all of which will have a tremendous impact on training now and in the future. Nevertheless, the Army must be on the cutting edge, adapting its way of doing business in order to address a rapidly changing environment, both domestic and international.

TRADOC's mission of running the schoolhouse and determining training standards for the Total Army remains. The Army's training system, by design, by policy, includes an institutional training base—a schoolhouse. Here, the Army trains its recruits and young officers and periodically throughout the soldiers' careers brings them back to the schoolhouse. The individual and collective skills will continue to be honed in the units while personal, individual responsibility is placed on soldiers and civilians for self-development.

Army Training System

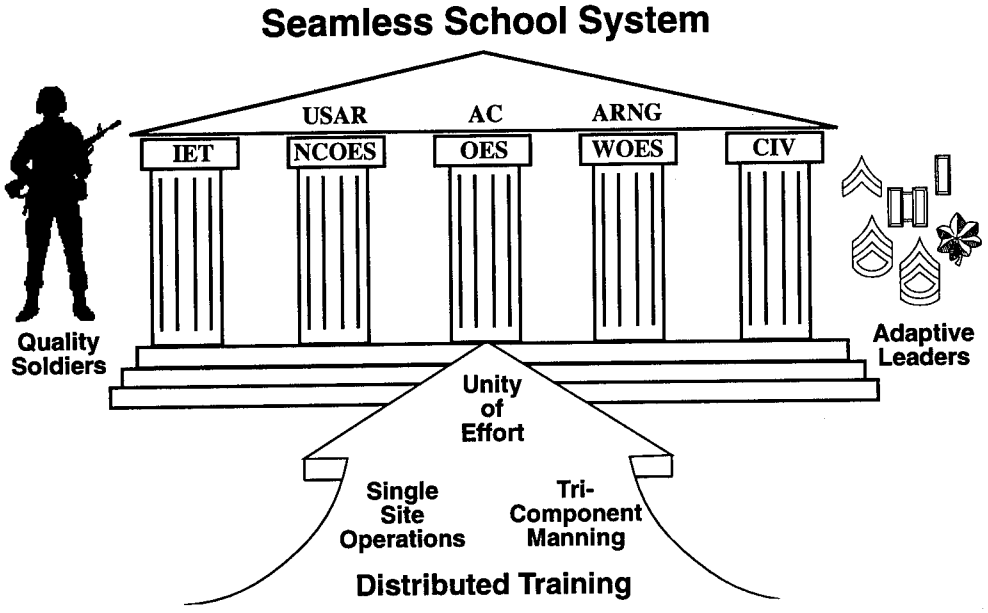


Training, to include institutional, unit, and self-development, has already been modified in many ways to move away from the predictable, clear-cut Cold War scenario and to support the more ambiguous future requirements across a broader operational spectrum. Institutional training has retained its well-proven and successful structure, while

leveraging training technology such as simulators and simulations and updating content to encompass future contingency operations and force projection requirements. Although expensive, the Army's decision to use small-group instruction continues to pay big dividends and must be protected, along with the commitment to field hands-on training.

By pursuing technological advancements, more realistic, effective, and efficient training is being conducted. Initiatives include the use of vocational technical schools for selected high-technology specialties; the increased use of simulations, including distributed interactive simulations; MOS consolidations; and a combined officer advanced course for logisticians. The Army continues to place responsibility on individual soldiers and civilians for self-development, and TRADOC provides training support to this effort with varied courses and training materials. We are also vigorously pursuing training options (Future Army Schools 21) involving the interaction of our three Army school systems: active, reserve, and National Guard. This cooperation will ensure that quality training is available to our leaders and soldiers across all the Army components.

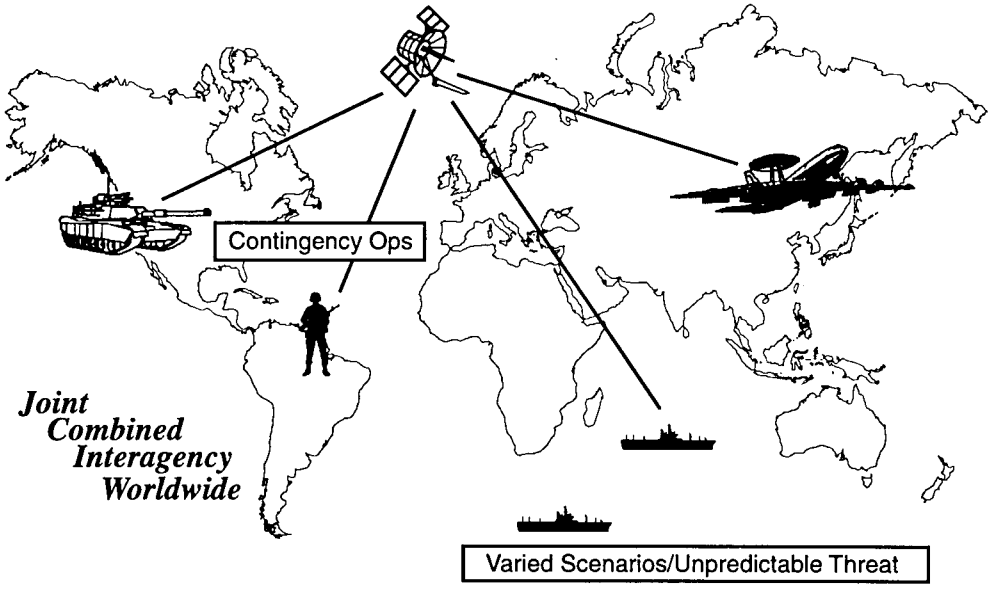
The training system must have a single training standard for the Total Army. Our goal is to create a seamless school system that will have unity of effort, tricomponent manning, and the fewest training sites possible, while leveraging the advantages of distributed training. At the same time, this effort will equate to greater efficiency and cost savings. Far-reaching benefits will be realized in institutionalizing such a program.



The Army is also looking at where it can consolidate or collocate like training at one installation, or at a single location for all Services in order to gain economies and efficiencies in a declining resource environment and to sustain the excellence of what we are doing.

Another important change from Cold War Army training entwines varied training scenarios with unpredictable threats in a joint, combined, and interagency environment worldwide. These diverse contingency missions are designed for use in both schools and combat training centers. Contingency scenarios have been developed and employed at all combat training centers, to include US support at the Combat Maneuver Training Center to train a Dutch marine battalion for a peacekeeping role in Cambodia. Joint and combined training is a must and we are doing it now.

Seamless Training Support



What kind of practice fields do we need for a force projection Army? While the Army has what it primarily needs, it recognizes that more needs to be done in the area of military operations in urban terrain (MOUT) and combat in built-up cities. This is being worked hard at the Joint Readiness Training Center's world-class MOUT facility.

It is also the Army's goal to protect live fire and maneuver at battalion level and below since these skills are critical and the most perishable. At the same time, we must leverage the technologies of advanced simulation for brigade and higher echelon

training. The Army is trying to do several things with simulations. We want to do training and leader development, look at doctrine, and work the combat development thesis. However, with these multiple goals in mind, recognizing that the Army cannot afford to have a separate set of equipment and software for training simulators/simulations and another for combat is important development. The Army's training system is on target, supported by a wide variety of mission training plans, training aids, devices, simulations, and simulators that enhance combat readiness and promote the flexibility and versatility that will be required for the future.

In meeting tomorrow's training requirements, I believe we must emphasize the following areas: initial entry training, leader development, total force, combat training centers, joint and combined operations, and training technology. The challenge will be to sustain the excellence and ensure the relevance of the Army's training system and leader development programs at an affordable cost to our Army.

Meeting Tomorrow's Training Requirements

As an addendum to the thoughts addressed above, key seminar discussion points focused on how the Army should train for the future given a reduced force structure and a smaller budget while its roles and missions are expanding.

One panel member asked if the Army could expect its soldiers and equipment, trained and developed for warfighting, to perform effectively in peacekeeping and similar missions

where restraint is needed. Of particular concern was the apparent conflict between the need for restraint in peacekeeping operations and the warrior spirit necessary for success in combat. The feedback overwhelmingly supported the approach that Army training should continue to concentrate on warfighting skills to ensure building the cohesion, discipline, and teamwork necessary for operations other than war. The "train-for-war" approach remains the thrust of the Canadian and British armies, which have vast experience with peacekeeping operations worldwide.

The Army's primary purpose is to establish control over an area of land and its population. This role can be fulfilled in a variety of ways, each requiring core combat training and perhaps unique mission training. Some operations may achieve greater success by providing specialized training to selected units just prior to their deployment.

The impact of leader development policies and the unique training requirements of the reserve components were also discussed. The future Army will require leaders with a variety of skills and experiences. It will need trained leaders with an in-depth liberal education to more effectively execute the many new and varied missions they will face. In recognizing this requirement, we will have to come to grips with the subsequent impact that developing intellectually astute leaders will require time away from troop assignments. This situation will necessitate careful career management of these leaders to ensure their capabilities are not lost to the Army. The training challenges that the active component faces are dramatically magnified when applied to the reserves, who have far fewer training days available to them in a given year. Exciting, challenging, and time-efficient training to standard is vital to the reserve components to capitalize on available training time. The distributed training program and improved training technologies for simulators and simulations are expected to improve training throughout the Army.

Two additional comments are worth highlighting to generate additional thought. One related to the age of leaders and the other to the Army's increasing inteagency coordination and our potential subordination to civilian leaders based on the specific mission.

As both the active and reserve components of the Army downsize, the average age of leaders may naturally increase. Training and leader development policies may need to be adjusted to capitalize on these leaders' increased experience level and to promote their flexibility.

Both senior and junior Army leaders will operate more frequently with not only the other Services but allies, coalition partners, and other US federal agencies. In many overseas missions, the ambassador of the country involved has overall charge of operations, and other federal agencies may be involved as well. This needs to be stressed in our institutional and unit training programs.

Determining Future Requirements

Major General Larry G. Lehowicz
TRADOC Deputy Chief of Staff for Combat Developments

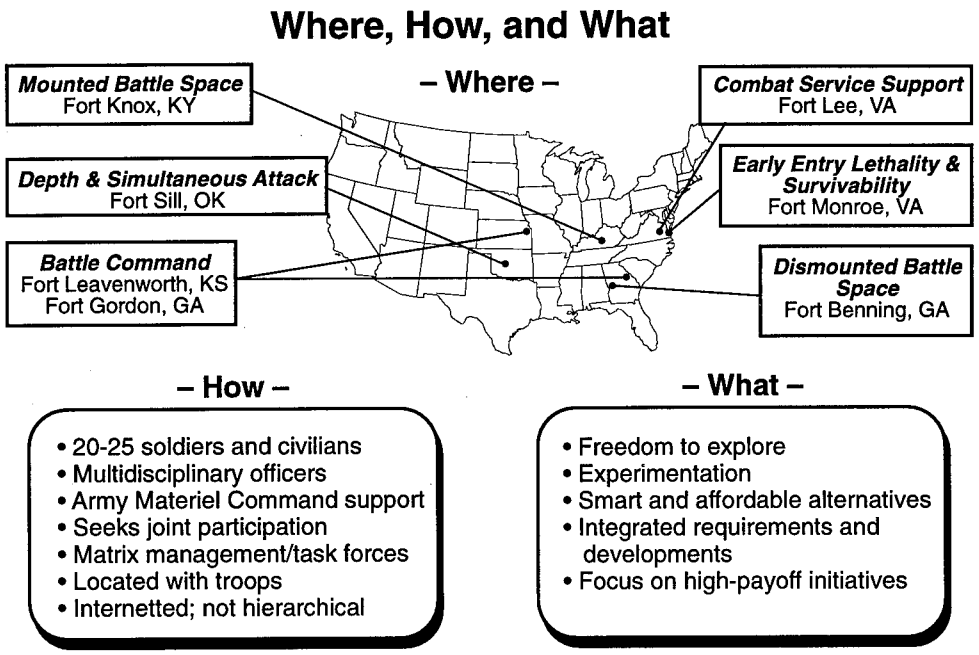
Building the *force projection Army* is TRADOC's highest priority. However, constrained resources—time, people, and money—and the absence of a convenient yardstick with which to measure our capabilities against a defined adversary preclude a business-as-usual approach to capability enhancement. Moreover, revolutionary advances in simulation technology, which can now replicate battlefields with great fidelity, offer unprecedented opportunities to discover emerging battlefield capabilities. They also offer opportunities to experiment with new ideas and technology in simulation and to refine requirements until they are "nearly right." The TRADOC response to this situation is a program called *The Battle Labs.*

The changing nature of warfighting and identified vulnerabilities are the focus of the The Battle Labs program. Experiences from Operations Just Cause, Desert Shield, Desert Storm, and Provide Comfort highlight current force capability deficiencies or vulnerabilities. Moreover, those experiences revealed to us that the conduct of battle is changing in several areas—referred to today as battle dynamics. Mastery of these dynamics will prove crucial to success in future operations. These dynamics are early-entry force lethality and survivability; simultaneous attack in all three dimensions throughout the depth of the battlefield; domination of expanding battle space and maintaining lethal reach over an adversary; battle command, to include both the art of command and the technical means; and sustainment of the fight.

Battlefield dynamics provide a frame of reference for requirements definition, combat developments, and capability analyses. They highlight apparent changes in the nature of warfighting; therefore, they should generate most of the force projection Army requirements across the doctrine, training, leader development, organization, materiel, and soldier (DTLOMS) spectrum. When conventional capability enhancement appears to meet battlefield dynamics-generated requirements, normal combat development processes continue. However, when situations exist that offer a "quantum leap" in capability or should be integrated horizontally across the force, the Battle Labs use special combat development processes. Historical examples of such situations include the development

of the Minie ball and the addition of wireless radios to tracked vehicles, both of which had tremendous impact across the DTLOMS spectrum.

Each of six Battle Labs focus on one of the battlefield dynamics. The Early Entry Lethality and Survivability Battle Lab (EELSBL) is at Fort Monroe; Depth and Simultaneous Attack (D&SABL) is at Fort Sill; Mounted Battle Space (MBSBL) at Fort Knox; Dismounted Battle Space (DMBSBL) at Fort Benning; Battle Command (BCBL) is split between Fort Leavenworth where art of command issues are worked and Fort Gordon where technical means/hardware issues are worked; and Combat Service Support (CSSBL) is at Fort Lee. Their efforts focus on fixing major deficiencies or vulnerabilities identified during recent operational experiences, to include operations other than war such as disaster relief and peacekeeping, and developing enhanced capabilities to maintain our overmatching combat edge on future battlefields.



The Battle Labs task organization provides economy of scale, forces horizontal integration of ideas and technology into related competing programs, and reduces branch parochialism by requiring a combined arms and Services approach to initiatives. Moreover, five of the six Labs are collocated with troop units. Just Cause and Desert Shield/Storm proved that soldiers and their leaders adjust to, assimilate, and take advantage of advanced technology faster than the Army fields it. Alignment

with FORSCOM units allows the Battle Labs to experiment with new ideas and technology in an operational environment and at the same time to get good ideas from "real" soldiers.

Using state-of-the-art telecommunications and automation, the Battle Labs share information and ideas with each other, the extensive materiel development community, academia, and industry. The Battle Lab Integration and Technology Directorate at HQ TRADOC is the net control station for communications; it tracks the status of initiatives and integrates the Battle Lab issues at HQ TRADOC.

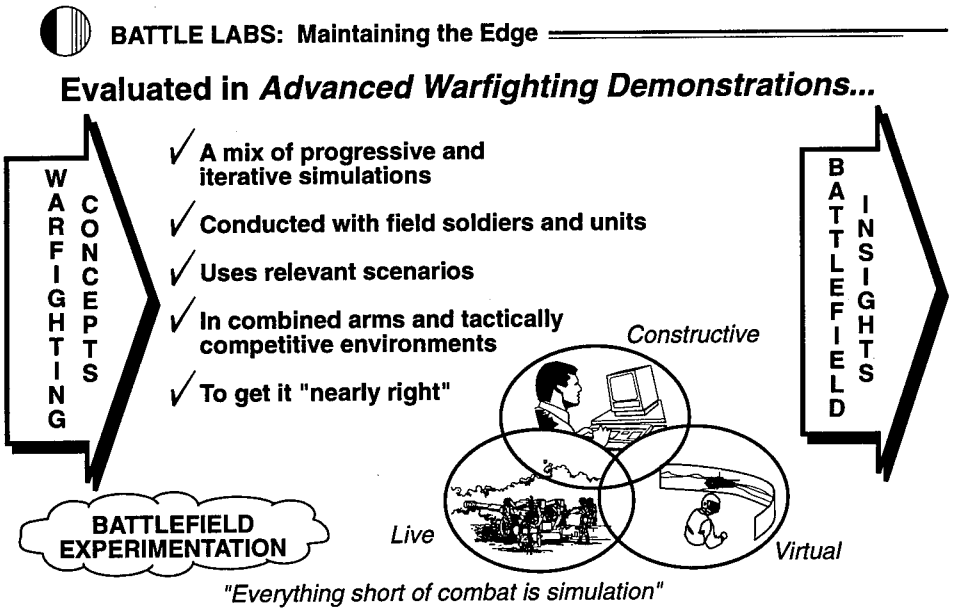
The Battle Labs have lean staffs of talented, multidiscipline officers and DA civilians. TRADOC uses matrix management techniques to work issues. The Army Materiel Command, a partner with TRADOC in the the Battle Lab Program, is providing representatives to all of the Labs and substantial support from its various research and development organizations. The Battle Labs have also established ties with many of the national laboratories, the Advanced Research Projects Agency, and other science and technology organizations. Many private corporations work with the Battle Labs, with several studies and projects supporting the Battle Lab initiatives. The Battle Labs are closely aligned with the Louisiana Maneuvers (LAM) Task Force. They are the lead agencies for five of the eleven 1993 and five of the eight 1994 LAM issues.

Each Battle Lab has a core initiative. The EELSBL is identifying 2,000- and 10,000-man early-entry force mixes (2K/10K forces), which are more lethal and survivable than their predecessors while enhancing deployability. The MBSBL is improving battlefield synchronization of combined arms task forces by exploiting the power of digitized communications to enhance situational awareness down to individual fighting system level and to improve target handoff. The DMBSBL is improving night-fighting capabilities across the combined arms force, starting with standardized focal plane array and the second-generation forward-looking infrared systems (FLIR). The D&SABL is reducing the sensor-to-shooter time line to allow precision targeting of short-dwell and moving targets. The BCBL is developing a robust command and control capability for commanders on the move. The CSSBL is generating total asset visibility and improving the distribution management system for all classes of supply to and in a theater of operations.

Simulations—constructive, virtual, and live field trials—are the principal Battle Lab tools. Modern simulation technologies afford relatively low-cost opportunities to experiment with changes to any aspect of DTLOMS and provide timely feedback that can be incorporated into subsequent experiments.

Distributed Interactive Simulation (DIS) will further expand this capability. When fully developed, DIS will be a series of protocols that allow multiple simulations to interact with each other. Virtual simulation is the most important subset of DIS and will provide increasingly accurate representations of conditions on the combined arms battlefield linked with reconfigurable weapon system simulators at each Battle Lab. Each Battle Lab simulation will employ scientific methodology—a clearly defined hypothesis, collection of test data, and analysis of results. The Battle Labs will use a mix of progressive and iterative simulations conducted with TO&E soldiers and units using relevant scenarios in a combined arms and tactically competitive environment to define requirements and demonstrate capability enhancements. A series of simulations involving the same requirement or capability constitute an advanced warfighting demonstration.

Experiments Are Key

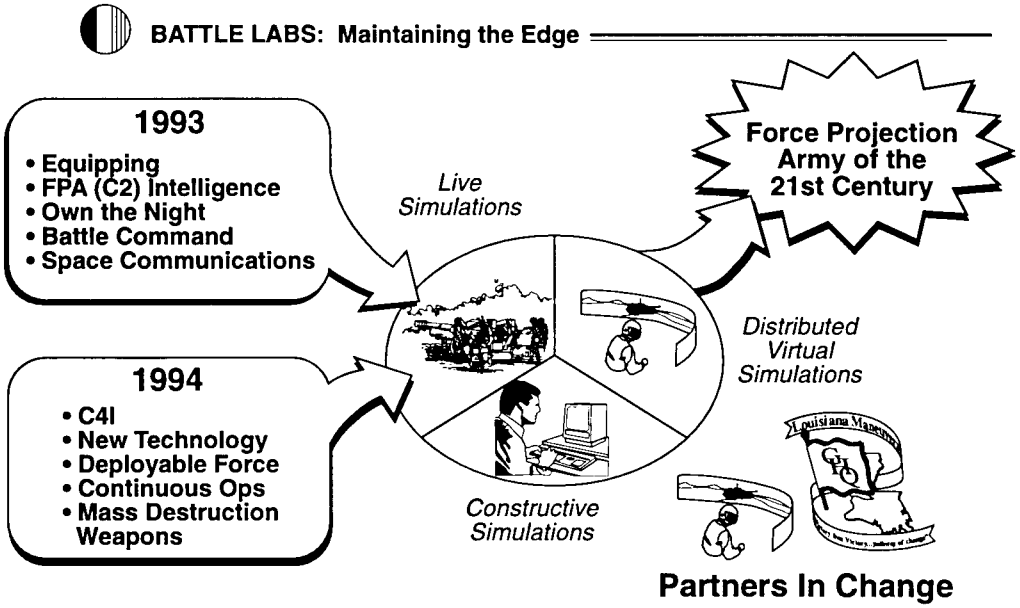


Little more than a year old, the Battle Labs are already producing tangible results. The MBSBL has been examining the operational advantages of digitizing the combined arms task force to enhance situational awareness and to facilitate target hand-off, both in simulations and in field trials. Digitized communications across the combined arms task force allow increased tempo over more dispersed areas with the ability to mass rapidly with direct and indirect fires when needed. This was amply demonstrated during constructive and virtual

simulations in November-December 1992, and in a tactically competitive environment by Task Force 1-70 Armor on 25 March 1993 at Fort Knox when M1A2s, M2s, FISTVs, M106A2s, and OH-58 Kiowa Warriors were digitally linked. The 1st Cavalry Division continued the experimentation during a July 1993 National Training Center rotation with an even greater number of digitally equipped combat systems. Data collected during these simulations reveal that horizontally integrated digital communications resulted in a 50 percent reduction in mission planning times, an 80 percent reduction in FRAGO planning times, a 28 percent increase in loss exchange ratios, and a 700 percent decrease in "fire for effect" times. These simulations, along with others planned later in 1993 and 1994, constitute the The Battlefield Synchronization Advanced Warfighting Demonstration.

Likewise, the CSSBL has conducted two highly successful field trials of total asset visibility, which will solve a major Desert Shield/Desert Storm deficiency. The ammunition retrograde from Europe in January 1993 and deployment of 3d Brigade, 25th Infantry Division, in March 1993 were monitored using the Automated Identification Technology (AIT) System. Near-real-time equipment visibility was maintained at all times using radio frequency tags and satellite transponders on ships and trains.

Battle Labs-LAM



This is not the first time the Army has used a different approach to enhance force capabilities. Examples include the Howze Board, the 11th Air Assault Division, the 1st Cavalry Division (Airmobile), the Triple Capability (TRICAP) Division, and the 9th Motorized Division/Army Development and Experimentation Agency (ADEA). All contributed measurably to current Army capabilities. The Battle Labs will continue this tradition of innovation across the entire DTLOMS spectrum and into the Army and joint arena. Battle Lab insights will feed the Department of Defense Planning, Programming, Budgeting, and Execution System and streamline the requirements definition time line. Moreover, Battle Lab materiel insights will reduce technical risks and cumulative life-cycle costs by minimizing postproduction "fixes" and by facilitating technology insertions and horizontal technology integration.

Farsighted soldiers and civilians who recognize and take advantage of opportunities and harness change to work for us instead of reacting to it are building the force projection Army of tomorrow. The Battle Labs provide them the means to look for, investigate, and experiment with training, leadership, organization, and materiel enhancements in the context of recent operations and battlefield dynamics. The Battle Labs provide the Army an experiential approach to defining requirements that maintains a combined arms and Services macrolevel view of warfighting. By generating nonmateriel solutions to some requirements, demonstrating the utility of nondevelopmental technology insertions, and identifying technology that should be horizontally integrated across the force, the Battle Labs will help the force projection Army exceed the challenges of the next battlefield.

Future Battle Vision

Brigadier General Lon E. Maggart
TRADOC Deputy Chief of Staff for Doctrine

With the end of the Cold War, the United States is internationally recognized as the world's sole remaining superpower, and the Army as the recognized leader in the conduct of sustained land combat. Consequently, we stand at a crossroads in history. The world today has been radically transformed in a span of just four years. It is unclear when and from where the next challenge to America's vital interests will emerge, but regardless of the uncertainty of future threats to our vital interests, our challenge as the nation's military leaders is to determine as best we can what the face of future battle may look like and prepare our forces accordingly.

The participation of senior leaders, both active and retired, signals the great importance they place on coming to grips with the challenges the Army will face as it moves into a new era—a new century that holds not only great opportunities but also great dangers. The American people will continue to look to the strong leadership and unique capabilities provided by their armed forces to deal with the complex problems brought by the future.

Let me emphasize one point in particular before sharing some thoughts related to future battle vision. This point describes the very reason for the Army's existence. While we discuss and debate the nature of future conflict, we must be ever mindful that the activities in which the Army engages will involve real soldiers, from real units, dealing with the harsh realities and immutable constants of land combat—chaos, friction, fear, and violence. Though the methods and devices of warfare may change, soldiers must always be prepared to deal with the realities of closing with and killing the enemy.

The great French Marshal Lyautey once asked his gardener to plant a tree. The gardener objected that the tree was slow growing and would not reach maturity for 100 years. The marshal replied, "In that case, there is no time to lose; plant it this afternoon."

John F. Kennedy

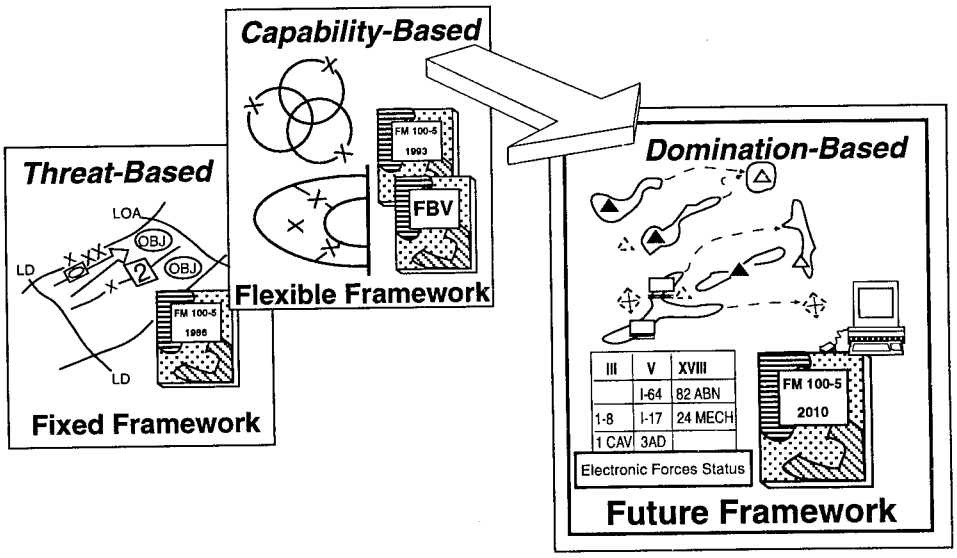
The intent of this article is to plant a seed to allow us to look at new things in new ways—not old things in new ways. I hope to explain what our doctrine has been and what it needs to be in the future, for I am convinced that our success in the years to come rests on our ideas and on adopting new ways of thinking. The 1993 edition of FM 100-5, *Operations,* and the doctrine that follows will forever kill linear thinking and linear warfare. Commanders will be able to use all of the available tools to maintain the warfighting edge established so dramatically in Operation Desert Storm. These tools include the ability to project lethal and survivable forces from the United States, depth and simultaneous attack, and versatility of leaders and units.

THE FUTURE BATTLEFIELD

The diagram suggests that the 1993 version of FM 100-5 is oriented on a capability-based, flexible battlefield framework. The wide variety of threats and the ever-expanding range of military missions extant in the world today demand a flexible doctrine that describes *how* to think versus *what* to think. Present and future threats are not as clear-cut and predictable as the Soviet threat of the past. Simply stated, today we must deal with more threats than ever before. None of them can be as easily templated as the Soviet model. Therefore, the problem of

Future Battlefield Framework

LINEAR vs NONLINEAR OPERATIONS



determining exactly what forces and capabilities we need is extremely complex. Regardless of the ambiguity, maintaining the initiative in war and in operations other than war—dominance of the battle space—will be critical.

In the future, we will be able to combine the intellectual power of our leaders and soldiers with the technological power this country is capable of generating. We will rely on America's dynamic technologies to both tailor our fighting force and provide them with the weaponry necessary to dominate any battlefield on which we operate. This concept is shown in the "future framework" portion of the graphic. The amoeba-like figures represent the actual battle space of units operating on the battlefield. The intent is to demonstrate that we can portray electronically, for the first time, both the physical and intellectual dimensions of the battlefield.

Notice that no boundaries are shown on the figure. This particular battlefield needs no boundaries since the commander has a visual *living* representation of how his units are operating. Automation will allow the commander to devote more mental energy to the solution of the tactical problem at hand—winning decisively with the fewest casualties. With the touch of a button the commander will be able to access the status of units on the battlefield and their locations, weapons system information, and other data.

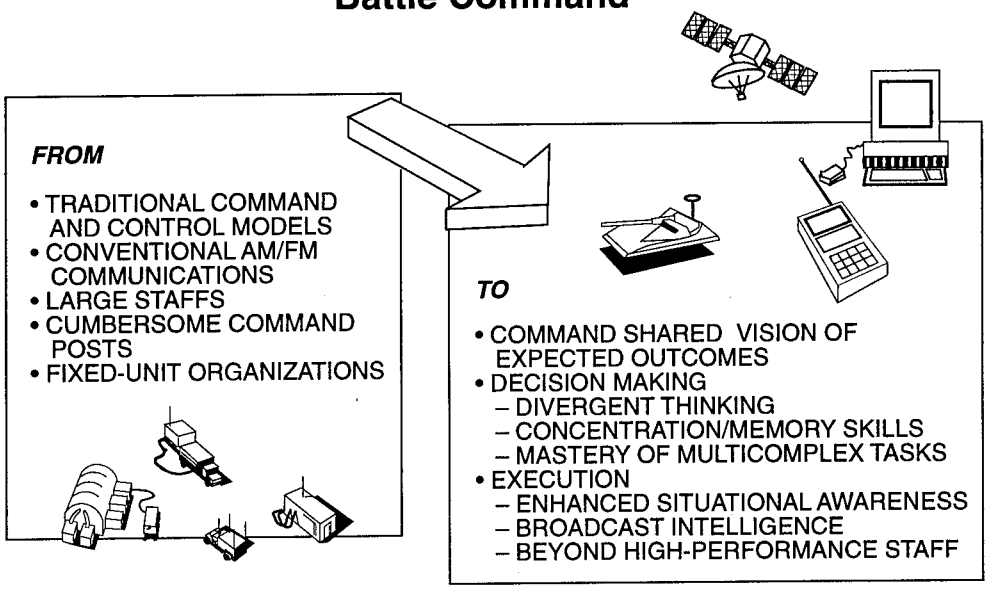
A detailed review of Operations Just Cause and Desert Storm suggested five specific areas where the battlefield appeared to be changing the most. These areas, subsequently called battle dynamics, provide a handy baseline to further address "future-related" thinking.

BATTLE COMMAND

Battle command began with the simple notion that commanders need to be able to command their organizations while on the move. Upon further study, however, this concept has been expanded to include the art of command as well. Technology holds the key. By digitizing the battlefield, commanders in the future will no longer be tied to their command posts. Not only will commanders be able to command their units from the front while on the move, they will also have the capability to share their vision of expected outcomes with every player on the team. This capability will give them the power to reach out and put their arms around every soldier in the outfit.

The ability to share that vision is the cornerstone of the art of command. In a real sense, the effectiveness of every operation turns on whether the entire organization understands the

Battle Command



commander's vision. In the ultimate sense, victory or defeat on the battlefield depends on it as well.

In addition, decision makers, both commanders and staffs, now have the option of being able to consider all possibilities, not just a select few. As we consider future operations, the responsibility of the commander to process information will expand. Further, technological advances will reduce the size of the staff. Both commanders and staff will be required to perform at a much higher level of efficiency. High-performing staffs capable of third-order thinking—thought processes well beyond simple cause and effect—will be the norm. Leaders who can astutely grasp the complexities of a given situation and look to the future for solutions will be required to lead them. Both must be able to exercise these skills when they are tired, stressed, hungry, and afraid.

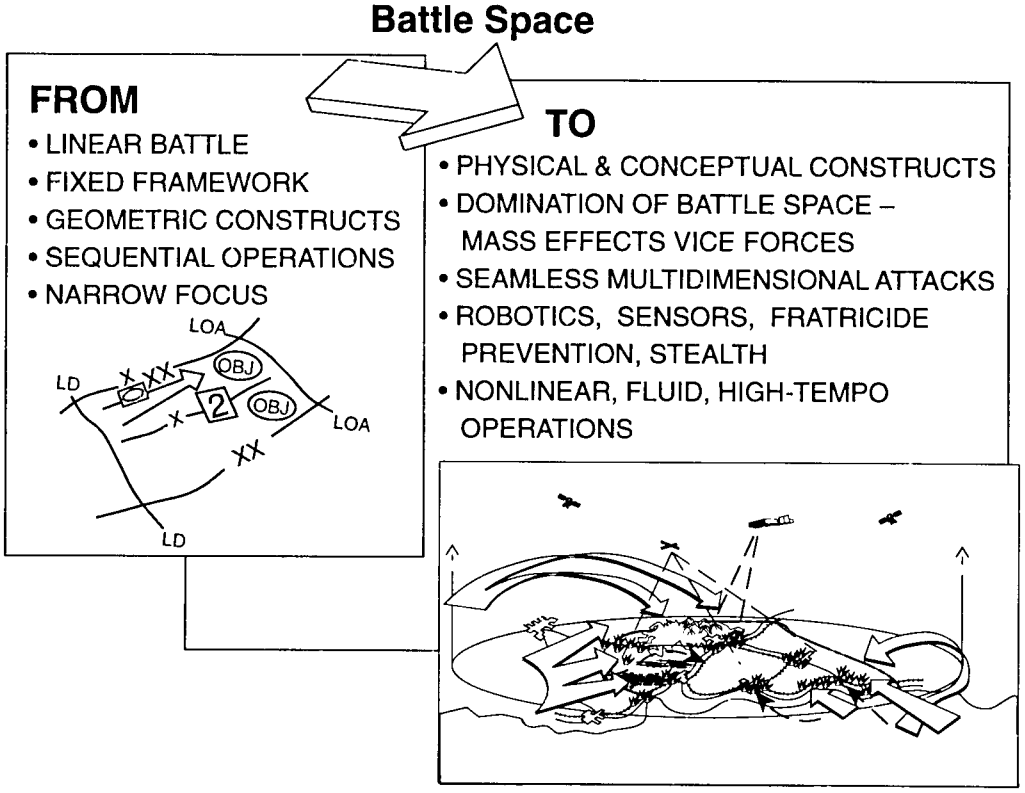
BATTLE SPACE

Battle space is a notion that includes both physical and conceptual dimensions for dominating the enemy and protecting the force in a given area of the battlefield. At the tactical level, a unit's battle space is determined in great measure by its combat power—a function of acquisition, METT-T, and the destructive effects it can bring to bear on the enemy, including joint and combined assets. Battle space also includes the requirement to harness other factors such as information

control. Battle space becomes an increasingly theoretical construct at the operational and strategic levels of war.

In simple terms, battle space is the commander's vision of the battlefield and how all warfighting functions and activities can best interact to achieve overwhelming and decisive results. Using available combat power, commanders seek to dominate the enemy in a given battle space. If one extrapolates the complexities of battle space to the future, the problem is more than simply the capability and application of weapons systems. Rather, it is one driven by a variety of factors ranging from the influence of new approaches in battle command to space-based weapons systems. Ultimately, battle space constitutes a multi-dimensional sense of the breadth, depth, and height in which the commander positions and moves assets over time, space, and purpose. Future battle space domination may involve the use of new equipment, command and control tools, and technologies such as robotics and new sensors. All of this speaks to a substantial requirement for the application of intellectual and leadership energy in new ways using new tools and techniques.

Effectively managing battle space in the future will be further complicated by the presence of our allies, their



equipment, and noncombatants on the battlefield. In this regard, future battlefields are likely to be much more complicated than those of the past. The presence of various sophisticated acquisition and communication devices will add to battle space clutter and increase the difficulty of distinguishing friend from foe. Battlefield identification will become more challenging.

Doctrinal materials can address procedures for fratricide prevention in routine alliance relationships. However, many of our future relationships may result in *ad hoc* coalitions for which procedures may have to be developed virtually on the spot. While doctrinal procedures and technological solutions for fratricide prevention are ongoing, reducing the timeless problem of "friendly fire" will require constant command attention. The changing nature of war demands it.

The result of these and other notions outlined in our current and future doctrinal products is a picture of future battlefields—full dimensional operations. The battlefield will not be a place for amateurs, but a place for intellect. Commanders on this nonlinear, fluid battlefield must adeptly execute missions in a very complex, swirling, high-tempo environment involving joint operations. To meet these challenges, however, the commander will have a major advantage. Emerging technological advances will provide the capability for future battles to unfold exactly as envisioned by the commander. But, just as with fratricide, the fog and friction associated with the execution of combat operations will remain. We are, nevertheless, pursuing means to reduce friction and pierce the fog. We have within our reach the means for subordinate leaders and soldiers alike to clearly understand their commander's battlefield vision and to monitor operations and changes through living, animated, electronic battle maps.

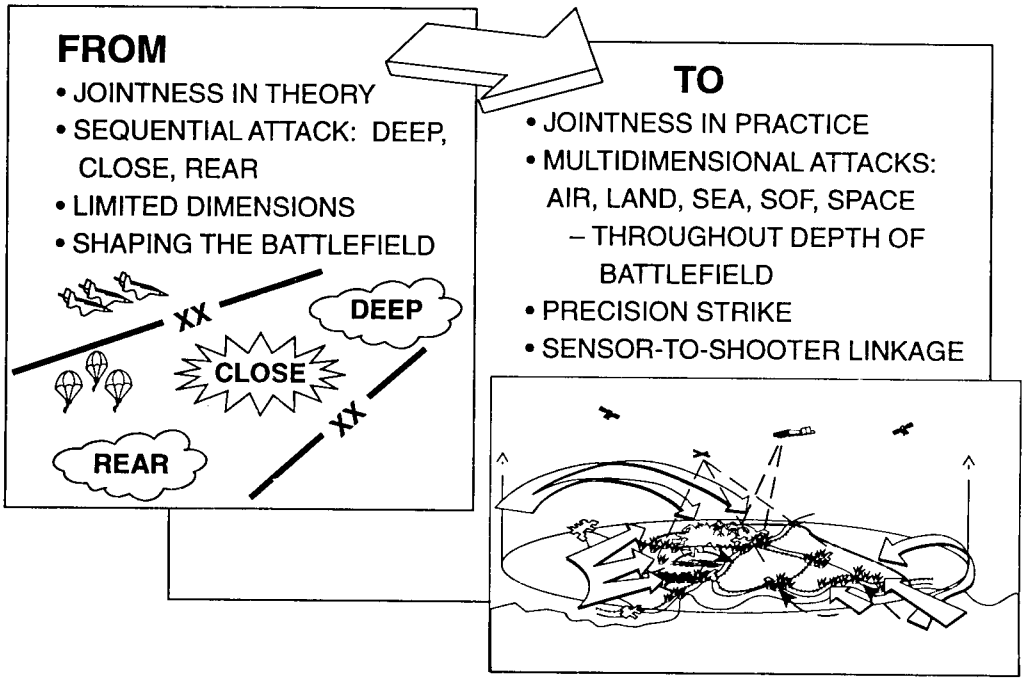
DEPTH AND SIMULTANEOUS ATTACK

Joint operations will be integral to the future battlefield to ensure that the enemy is struck wherever and whenever he is found. The requirement for depth and simultaneous attacks against the enemy mandates a joint approach. But to execute joint operations, commanders will have to be well-versed in handling a variety of weapons systems and the sensors that support them simultaneously with other battlefield operations.

Operations in the joint arena will require significant adjustments to the way we currently conduct warfare. For example, precision strikes will be the norm, and commanders must be ready to deal with multiple sensor-to-shooter combinations.

Artificial intelligence will be used to recommend what targets to strike, when to strike, and by what systems, all via automation. However, the ground commander must have the means to make timely, well-informed decisions that will drive this fast-paced, highly dynamic future combat environment. He must remain the final authority for strikes within his area of operations as he is the only source for a universal picture of the battlefield. Because of the complexity of ground operations, only he can accurately assess the impact on the entire operation of targets not struck or struck in the wrong sequence. The incorporation of digital data technologies used with integrated and interoperable automated systems will allow the commander to more fully concentrate on orchestrating the battle as it unfolds.

Depth and Simultaneous Attack



The fact that some parts of the battlefield will be automated will mean fewer factors to distract the commander. Much of the battlefield plan will be incorporated into the scheme of maneuver prior to the commencement of the battle, allowing for specific elements to be automatically preprogrammed for execution. For the very first time in history, the future battlefield commander will have the power, along with the time, to fully focus on the control of the deep, close, and rear battles simultaneously. However, no matter how thoroughly we have optimized

the automated system, commanders of the future must have the training and intellectual capacity for the tasks at hand.

EARLY ENTRY

The Army structure for future warfighting may include smaller, more flexible tactical units than today to accommodate the requirement for early entry operations. As General Starry stated, we will see Army systems routinely operating from Navy vessels. The system may be the sister of the Army Tactical Missile System (ATACMS) or the son of the Multiple Launch Rocket System (MLRS). The system may be the next dimension of attack helicopters or a robotics helicopter or gunship.

The development and construction of lighter composite materiel will allow equipment and supplies to be moved quicker and with greater ease. In real terms, this increases our capability to rapidly deploy, fight, protect the force, and sustain it more effectively across a broad range of options. Thus our force has significant capability for flexibility and versatility not currently enjoyed.

COMBAT SERVICE SUPPORT

Combat service support may be the area in which we can make the greatest strides. For example, what if we built our shipping containers to be consumable—either edible or burnable for fuel? What if they are disposable to reduce the number of people and facilities required in theater? In the larger sense, we must focus the same mental energy on solving the logistical problems as we have on solving the tactical and operational ones.

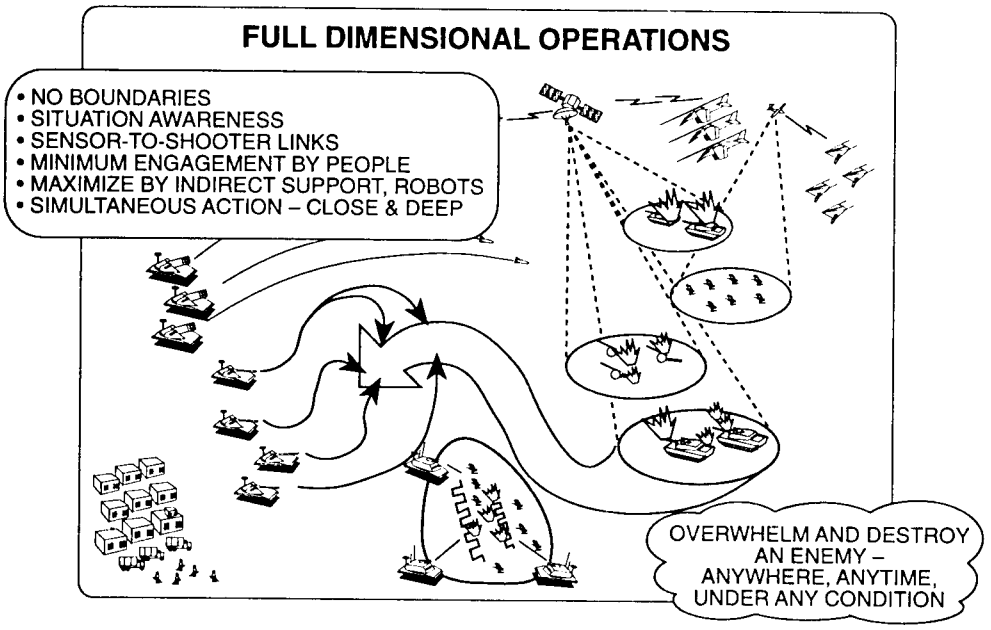
FUTURE BATTLE

The future battlefield will look different. The following illustration simplifies what in actuality is a very complex problem. As mentioned earlier, boundaries will not be required because the capability for situational awareness will be built into every vehicle on the battlefield. Commanders will know where all of their forces are at any given time, to include the location of adjacent and supporting forces. Commanders will also have an accurate picture of where enemy forces are located as well.

Sensors over the battlefield will not only acquire targets but will also provide direct links to various computers which have been programmed to engage specific battle targets at designated times based on the overall scheme of maneuver. Soldiers will not mass on this battlefield, nor will equipment. Effects will

be massed instead. However, if it became necessary to mass weapons or equipment, robotics could be used without endangering soldiers. Similarly, we will maximize indirect systems that are far behind the close battle and not subject to direct fire—in fact, not vulnerable to any fire. If the bulk of the fighting can be executed in this fashion, human resources can be husbanded and direct fire systems can be reserved for deep attacks and counterattacks.

The Future Battle



The deep, close, and rear battles will be fought simultaneously because the commander will be able to visually express his vision of the intended outcome and his entire concept of the operation. He may actually control the battle exactly as he envisions it as opposed to conducting it in a sequential fashion based on oral instructions and rehearsals conducted before the fight.

To complicate matters more, at the same time we are fighting the battle, other activities, such as humanitarian assistance or relocation of displaced persons will be occurring. These activities, which we currently describe as operations other than war, will impact on the commander's ability to successfully prosecute the war. They may in themselves be the strategic objectives of the fight.

Today, all of this is only a vision. But it is a vision that is founded in the possible. More importantly, it is vision founded in the necessity to make our warfighting capabilities match the changing world around us.

In closing, we need to recognize that while the Army is rapidly changing to meet the challenges of the future, soldiers just like us will still be the ones to execute those missions. The challenge is to bring to the battlefield the necessary skills to accomplish the complex tasks we will face. The bottom line is that no matter what kind of Army we have, what kind of organization, what kind of equipment, the mission will be the same. We must ultimately overwhelm and destroy the enemy anywhere, anytime, and under any conditions!

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